SHOUT
SHARE
IT

(2)

I

BULLETIN

OF THE

AMERICAN MUSEUM OF NATURAL HISTORY,

CENTRAL PARK, NEW YORK CITY.

(77th Street and 8th Avenue.)

Volume II, 1887–90.

37595
1/5/96

NEW YORK:
PRINTED FOR THE MUSEUM.
1890.

QH
1
A4
v. 2

American Museum of Natural History.

OFFICERS AND COMMITTEES FOR 1890.

President.

MORRIS K. JESUP.

Vice-Presidents.

JAMES M. CONSTABLE.
D. JACKSON STEWARD.

Secretary.

ALBERT S. BICKMORE.

Treasurer.

J. PIERPONT MORGAN.

Executive Committee.

JAMES M. CONSTABLE, *Chairman.*
H. R. BISHOP.
OLIVER HARRIMAN.
CHAS. G. LANDON.
The President and Secretary, *ex-officio.*

Auditing Committee.

CHARLES LANIER.
ADRIAN ISELIN.
WILLIAM E. DODGE.

Finance Committee.

J. PIERPONT MORGAN.
D. O. MILLS.
PERCY R. PYNE.

BOARD OF TRUSTEES, 1890.

Morris K. Jesup.
Benjamin H. Field.
Adrian Iselin.
J. Pierpont Morgan.
D. Jackson Steward.
Joseph H. Choate.
Percy R. Pyne.
James M. Constable.
William E. Dodge.
Andrew H. Green.
Abram S. Hewitt.
Charles Lanier.
Hugh Auchincloss.
Oliver Harriman.
C. Vanderbilt.
D. O. Mills.
Chas. G. Landon.
H. R. Bishop.
Albert. S. Bickmore.
Theodore Roosevelt.
Oswald Ottendorfer.
J. Hampden Robb.
D. Willis James.
Levi P. Morton.

Prof. ALBERT S. BICKMORE,

Curator of the Ethnological Department, and in charge of the Department of Public Instruction.

Prof. R. P. WHITFIELD,

Curator of the Geological, Mineralogical and Conchological Departments.

L. P. GRATACAP,

Assistant Curator of the Geological Department.

Prof. J. A. ALLEN,

Curator of the Departments of Ornithology, Mammalogy, Fishes and Reptiles.
Also temporarily in charge of the Department of Invertebrate Zoölogy.

FRANK M. CHAPMAN,

Assistant Curator of the Department of Ornithology and Mammalogy.

JENNESS RICHARDSON,

Taxidermic Department.

A. WOODWARD,

Librarian.

WILLIAM WALLACE,

Superintendent of Building.

JOHN H. WINSER,

Assistant Secretary.

CONTENTS OF VOLUME II.

Title-page .... i.
List of Trustees, Officers and Committees .... iii.
Contents .... v.
List of Illustrations .... vi.
Dates of publication of author's Separates .... vi.
Additions and Corrections .... vii.

PAGE

ART. I.—The West Indian Seal (*Monachus tropicalis* Gray). By J. A. ALLEN 1

II.—Note on Squalodont Remains from Charleston, S. C. By J. A. ALLEN 35

III.—Observations on some imperfectly known Fossils from the Calciferous Sandrock of Lake Champlain, and Descriptions of several New Forms. By R. P. WHITFIELD 41

IV.—Additional Notes on *Asaphus canalis* Conrad. By R. P. WHITFIELD 64

V.—Description of a New Form of fossil Balanoid Cirripede, from the Marcellus Shale of New York. By R. P. WHITFIELD .. 66

VI.—Notes on a Collection of Birds from Quito, Ecuador. By J. A. ALLEN 69

VII.—List of the Birds collected in Bolivia by Dr. H. H. Rusby, with Field Notes by the Collector. By J. A. ALLEN 77

VIII.—Note on the Faunal Resemblance between the Cretaceous Formations of New Jersey, and those of the Gulf States. By R. P. WHITFIELD 113

IX.—Preliminary Descriptions of two apparently New Species of the Genus *Hesperomys* from Florida. By FRANK M. CHAPMAN .. 117

X.—Description of a new Subspecies of the Genus *Sigmodon* from Southern Florida. By FRANK M. CHAPMAN 118

XI.—On the Habits of the Round-tailed Muskrat (*Neofiber alleni* True). By FRANK M. CHAPMAN 119

XII.—On *Cyclorhis viridis* (Vieill.) and its near Allies, with Remarks on other Species of the Genus *Cyclorhis*. By J. A. ALLEN .. 121

XIII.—Descriptions of New Species of South American Birds, with Remarks on various other little-known Species. By J. A. ALLEN 137

XIV.—A Revision of the Genus *Xiphorhynchus* Swainson, with Descriptions of two New Species. By FRANK M. CHAPMAN ... 153

PAGE

XV.—Description of a New Species of Hummingbird of the Genus *Amazilia*. By FRANK M. CHAPMAN 163

XVI.—Notes on a Collection of Mammals from Southern Mexico, with Descriptions of New Species of the Genera *Sciurus*, *Tamias*, and *Sigmodon*. By J. A. ALLEN 165

XVII.—Further Note on *Amazilia æneobrunnea*. By FRANK M. CHAPMAN 182

XVIII.—Remarks on Individual and Seasonal Variation in a large Series of *Elainea* from Chapada, Matto Grosso, Brazil, with a Revision of the Species of the restricted Genus *Elainea*. By J. A. ALLEN 183

XIX.—On the Maximilian Types of South American Birds in the American Museum of Natural History. By J. A. ALLEN 209

XX.—Descriptions of supposed New Species and Subspecies of Mammals from Arizona. By EDGAR A. MEARNS, Assistant Surgeon, U. S. A 277

Index 309

LIST OF ILLUSTRATIONS.

Cuts.

Heads of various species of *Cyclorhis* 125

Bills of various forms of *Elainea* 191

Plates.

Pl. I.—West Indian Seal (*Monachus tropicalis*).

II.—Skulls of same.

III.—Skulls and limb-bones of same.

IV.—Rostral portion of skull of *Squalodon tiedemani*.

V.—Rostral portion of skull and mandibular ramus of same.

VI–XIII.—Lake Champlain Fossils. Each plate is faced by an explanatory leaf.

DATES OF PUBLICATION OF AUTHOR'S SEPARATES.

ART. I and II, April 25, 1877. Art. VI and VII, March 22, 1889. Art. IX–XI, June 7, 1889. Art. XII, June 17, 1889. Art. XIII, June 28, 1889. Art. XIV, July 5, 1889. Art. XV, July 10, 1889. Art. XVI and XVII, October 21, 1889. Art. XVIII, October 31, 1889. Art. XIX, December, 1889. Art. XX, February 21, 1890.

From page 117 to the end of the Volume a small number of copies of the Bulletin were issued in sheets as soon as they were printed.

ADDITIONS AND CORRECTIONS.

Page 1, lines 25 and 26 from top, for "the British Museum specimen, it is said, having disappeared," read *except the original British Museum specimen.* This correction was made in a "Postscript," issued as an "inset" to face page 1, of the regular edition of the Bulletin. This self-explanatory postscript is for obvious reasons here reproduced.

"*Postscript* [*to Art. I*].

"Since the separates of the paper on the West Indian Seal were published, I have been kindly informed by Oldfield Thomas, Esq., Curator of the Department of Mammals in the British Museum, that Gosse's original specimen, the type of *Monachus tropicalis*, is still in the British Museum, 'stuffed and exhibited in the Mammal Gallery, as well as the so-called '*Cystophora antillarum.*' The statement on page 1 (line 25), that 'the British Museum specimen, it is said, having disappeared,' was made on what was with good reason supposed to be trustworthy authority. (See *Science*, Vol. III, No. 72, June 20, 1884, p. 752.) It proving otherwise, I am desirous of making the necessary correction.

"The second reference in the synonymy (page 3) should be cancelled, as the specimen later described by Dr. Gray as *Phoca tropicalis* was in this connection referred to merely incidentally, as stated on page 24, line 5.—J. A. ALLEN.

May 25, 1887."

Page 1, dele lines 12 and 13 from bottom.

" 45, line 10 from bottom, for **Tryblidium** read **Triblidium.**

" 72, line 9 from top, for **Spermophila** read **Sporophila.**

" 80, line 8 from bottom, for m. (= millimetres) read mm., and so in all similar cases from p. 80 to p. 100, inclusive.

" 87, line 3 from bottom, for Brazilian read Bolivian.

" 91, line 15 from top, for 92.5 m. read 9.25 mm.

" 95, line 9 from bottom, for *Formiccivora* read *Formicivora.*

" 134, line 12 from top, for Northwestern read Northeastern.

" 165, lines 2 and 9 from bottom, and p. 166, line 17 from top, for Hidalgo read Hacienda.

" 167, line 11 from top, for **Sciurus alstoni** read **Sciurus nayaritensis.***

" 195, line 4 from bottom, for *Miopagis* read *Myiopagis.*

" 195, line 1 from bottom, for *Myopagis* read *Myiopagis.*

---

* Since the publication of the paper entitled "Notes on a Collection of Mammals from Southern Mexico," etc. (pp. 165–181. published Oct. 21, 1889), my friend Mr. Oldfield Thomas, Curator of Mammals in the Natural History Department of the British Museum, has called my attention to the fact that the name *Sciurus alstoni*, given as above, is preoccupied by a *Sciurus alstoni* Anderson, published in 1878. I therefore take this opportunity of substituting *nayaritensis* for *alstoni* as the designation for the species named *Sciurus alstoni* on p. 167.—J. A. ALLEN.

Page 214, line 8 from bottom, for **Anthus,** sp. incog., and for the following seven lines, substitute the following:

Geobates pœcilopterus (*Wied*).

Anthus pœcilopterus Wied, Beitr. Naturg. Bras., III, i, 1830, p. 633.

Geobates pœcilopterus Sclater, P. Z. S., 1866, p. 205, pl. xxi; Pelzeln, Orn. Bras., i, 1868, p. 35.

Not in the Am. Mus. Nat. Hist.; not entered in the Wied MS. Catalogue.

This species is the subject of a short paper by Mr. Sclater, published in 1866 (l. c.), in which he identified Wied's *Anthus pœcilopterus* as above, giving a figure of this rare species, apparently from a specimen collected by Natterer.

I am indebted to Mr. Osbert Salvin for kindly calling my attention to Dr. Sclater's paper.—J. A. Allen.

Page 217, line 19 from top, dele sentence beginning "Opposite this entry," etc. See footnote to p. 274.

" 223, line 6 from bottom, for **hypoleucus** read **hypoleuca.**

" 251, line 9 from top, and p. 275, line 2 from bottom, for **rufimarginata** read **rufimarginatus.**

" 261, line 1 from top, for **aethereus** read **æthereus.**

" 265, line 7 from bottom, for *pulsatris* read *pulsatrix.*

" 273, line 2 from bottom, right hand column, for Leucopternus read Urubitinga.

" 274, line 36 from top, right hand column, for Anthus, sp. incog., read Geobates pœcilopterus.

POSTSCRIPT.

Since the separates of the paper on the West Indian Seal were published, I have been kindly informed by Oldfield Thomas, Esq., Curator of the Department of Mammals in the British Museum, that Gosse's original specimen, the type of *Monachus tropicalis*, is still in the British Museum, "stuffed and exhibited in the Mammal Gallery, as well as the so-called '*Cystophora antillarum*'." The statement on page 3 (line 25), that "the British Museum specimen, it is said, having disappeared," was made on what was with good reason supposed to be trustworthy authority. (See *Science*, Vol. III, No. 72, June 20, 1884, p. 752.) It proving otherwise, I am desirous of making the necessary correction.

The second reference in the synonymy (page 3) should be cancelled, as the specimen later described by Dr. Gray as *Phoca tropicalis* was in this connection referred to merely incidentally, as stated on page 24, line 5.

May 25, 1887. J. A. ALLEN.

ARTICLE I.—*The West Indian Seal (Monachus tropicalis Gray).*
By J. A. ALLEN.

PLATES I–IV.

THE existence of a Seal in the sub-tropical waters of the Gulf of Mexico and Caribbean Sea has been known for nearly four centuries, but only within the last fifty years has it been formally recognized in systematic zoölogy, and not till within the last two or three years have we had any knowledge of its characters beyond the information given by Hill and Gosse, published about forty years ago, based on two specimens taken off the coast of Jamaica. An imperfect skin, without skull, was soon after transmitted by Mr. P. H. Gosse to the British Museum, which, up to the present time, has constituted the only specimen of this animal known to be extant in any European museum. It was on this precious relic that the late Dr. J. E. Gray based the name *Phoca* (later *Monachus*) *tropicalis*.

No other specimen appears to have come into the hands of naturalists till 1883, when a half-grown individual was captured on the coast of Cuba, and fell into the hands of Professor Felipé Poey, of Havana, who had it mounted, and in October of the same year presented it to the U. S. National Museum. The specimen, when afterward remounted, was found to contain the skull, which was removed, and has been recently described and figured.*

This, up to December, 1886, was practically the only specimen known to be anywhere extant, the British Museum specimen, it is said, having disappeared.† During this month Mr. Henry L. Ward, of Rochester, son of Professor Henry A. Ward, the well-known 'museum-builder,' visited the three little keys off the northwest coast of Yucatan known as The Triangles, for the express purpose of securing specimens of this rare animal—Professor Ward having a short time before heard of its occurrence at this locality. Mr. H. L. Ward was joined in his expedition at Campeche by Mr. Fernando Ferrari-Perez, Naturalist-in-chief of the Mexican Geographical and Exploring Commission, where they together chartered a small schooner to visit The Triangles, which they reach Dec. 1, 1886. They found the Seals there in considerable numbers, but the weather proved unpropicious, and at the end of three days they were obliged, by the approach of a violent 'norther,' to put to sea with their work unfinished. Several dead Seals had to be abandoned on the keys, and the specimens secured they were obliged to hastily put aboard their vessel without proper care for their preservation ; but they fortunately reached Campeche in fair condition, and were then properly preserved for the homeward trip. Forty-nine Seals were killed, forty-two of which were taken away, but one of them was afterward lost. The specimens finally secured numbered thirty-four skins and seven skeletons, which were equally shared by Mr. Ward and Mr. Ferrari-Perez. The greater part of Mr. Ward's share of the spoils, including the skins, one skeleton, and a series of skulls, reached Rochester January 2, 1887 ; and, through the kindness of Professor Ward and his son, I had the opportunity two days later of examining in Rochester this interesting material, and of taking measurements and notes of the full series of skins and skulls. These included adult males and females, and other specimens in various stages of immaturity. Three of the skins—an adult male, an adult female, and a suckling young one (the only very young one secured)—and the skeleton (an adult male), were immediately purchased for the American Museum of Natural History. Three additional skulls and the skeleton of an adult female were loaned me by Mr. Ward for use in the preparation of the present paper. I am thus greatly indebted to the Messrs. Ward,[*] father and son, for their kindness in promptly placing in my hands the important material forming the basis of the present article.

---

* The West Indian Seal (*Monachus tropicalis*, Gray). By Frederick W. True and F. A. Lucas. < Smiths. Rep., 1884, pt. II (Dec., 1886), pp. 331–335, pll. i–iii.

† Since the above was written I have learned from Mr. H. L. Ward that there are "two small skins in Mexico," in the National Museum of the City of Mexico, which are said to have been taken about five years since at the East Triangle, by the crew of a vessel which was blown out of her course and compelled to anchor there by stress of weather.

A preliminary notice of this material was published in *Science*, in the issue for Jan. 14, and a supplementary notice in the following number of the same journal.[†]

In preparing the following pages I have had, for purposes of comparison, not only complete skeletons of the common Harbor Seal (*Phoca vitulina*) and the Bearded Seal (*Erignathus barbatus*), but a good series of skulls of these species, and of the Hooded Seal (*Cystophora cristata*), and of other species of the genus *Phoca*, and one skull of the Gray Seal (*Halichœrus grypus*), all belonging to the collection of the American Museum, and also a portion of a disarticulated skeleton of *Cystophora cristata*, kindly loaned me by the Cambridge Museum of Comparative Zoölogy, through the kind offices of Dr. D. D. Slade, curator of the Osteological Department. A few of the measurements given in the following pages are taken from my 'History of North American Pinnipeds,' published in 1880. I have also made use of G. Cuvier's description of the osteology of the Monk Seal[*] (*Monachus monachus*[†]) as a basis of comparison with its West Indian congener, and of Messrs. True and Lucas's excellent paper (l. c.) on the skull of the Cuban specimen of *Monachus tropicalis*. I regret that I am unable to compare this species, as regards its osteology, with any of the Phocids of the Southern Hemisphere, with which it seems to be in some respects allied, although not intimately, judging from the external characters and the published figures of the skulls of the Southern Phocids.

---

[*] Professor Ward had been for several years on the alert for this hitherto almost mythical species, and last year, while in Mexico, learned for the first time of the probable whereabouts of a small colony of them. To his son, Henry L. Ward, however, is due not only great credit for energy and enterprise in undertaking the search and successfully accomplishing the expedition, but for his readiness to assume all the risks attending it.

[†] Science, Vol. IX, No. 206, p. 35, Jan. 14, 1887, and No. 207, p. 59, Jan. 21, 1887.

Monachus tropicalis GRAY.

WEST INDIAN SEAL.

Seal, DAMPIER, Voy. round the World, Vol. II, pt. 2, 3d ed., 1705, p. 23.

Cystophora antillarum GRAY, Proc. Zoöl. Soc. Lond., 1849, p. 93 (in part only).

Phoca tropicalis GRAY, Cat. Seals Brit. Mus., 1850, p. 28.

——— *wilkianus* GOSSE, Naturalist's Sojourn in Jamaica, 1851, p. 307.

Monachus tropicalis GRAY, Cat. Seals and Whales, 1866, p. 20; Hand List of Seals, 1874, p. 11.

---

[*] Des Phoques vivans et de leur Ostéologie. < Ossem. fossiles, Vol. V, pt. 1, 1823, pp. 199–231, pl. xvii.

[†] *Phoca monachus* Hermann, Beschaft. d. Berlinische Gesells. Naturf. Freunde, IV, 1779, p. 456, pll. xii, xiii; *Phoca albiventer* Boddaert, Elen. Anim., 1785, p. 170; *Monachus albiventer*, auct. recent. The specific name *monachus* having priority over *albiventer* is here adopted. (Cf. A. O. U. Code of Nomenclature, Canon XXX.)

Monachus? tropicalis ALLEN, Hist. N. Am. Pinn., 1880, p. 708.

Monachus tropicalis ELLIOTT, Science, Vol. III, No. 72, p. 752, June 20, 1884 (the Cuban specimen, with figure of the animal).—TRUE and LUCAS, Smiths. Rep., 1884, pt. ii (Dec., 1886), p. 331, pll. i–iii (the Cuban specimen, with figures of the skull).—ALLEN, Science, Vol. IX, No. 206, p. 35, Jan. 14, 1887; *ibid.*, No. 207, p. 59, Jan. 21, 1887 (preliminary notice of the present material).—WARD (H. A.), Nature, Vol. XXXV, No. 904, p. 392, Feb. 24, 1887 (account of the rediscovery of the species at The Triangles).

Lobos marinos, early Spanish Voyagers.

Pedro Seal, GOSSE, l. c.

Jamaica Seal, Gray, l. c.

EXTERNAL CHARACTERS (Pl. I).—The color above in the adult is brown, tinged with gray, caused by the hairs being light at the extreme tip. The color becomes lighter on the sides, and gradually passes into pale yellow or yellowish-white on the ventral surface of the body. The front and sides of the muzzle, and the edges of the lower lip anteriorly are yellowish-white. The limbs are colored like the back. The mystacial bristles are smooth, tapering, and mostly white; some wholly so, others with the basal portion dusky, while a few of the shorter ones are often wholly dusky. They are set in about six rows, four of which are quite regular and distinct. The longest barbs in the adult are about three inches in length, but in the younger animals the longest reach a length of four and a half inches.

In the newly born young the hair is long, soft, and glossy black, and the mystacial bristles are wholly dark or blackish.

The color varies more or less in different individuals, according to age, particularly in respect to the front of the muzzle, which is sometimes dusky centrally; the ventral surface is more ochery and the back rather yellower in the younger individuals. The mystacial bristles also vary in color with the age of the specimen, they becoming lighter with age, and also shorter, thinner, and more tapering.

The fore feet are provided with well-developed nails, which attain a length of 18 mm. to 25 mm., about two-thirds of this length being fully exposed beyond the skin. On the hind limbs the nails are extremely rudimentary, forming merely minute, nearly concealed horny points.

The length of the adult, from the point of nose to end of the tail, is about seven and a half feet in the male, varying from about seven to nearly eight. The female is only slightly smaller, and is nearly indistinguishable from the male by either color, size, or form. The length of twelve flat or unfilled skins, measured in a straight line from the tip of the nose to the end of the tail, ranges from 4 feet 4 inches (1,311 mm.) to 7 feet 2 inches (2,166 mm.). Three immature specimens (probably two-year-olds) measure respectively 4 feet 4 inches, 4 feet 7 inches, and 4 feet 9 inches. Three others range between 5 and 6 feet. Another measures 6 feet 9 inches, and two exceed 7 feet (7 feet 1 inch and 7 feet 2 inches respectively). The skins being much contracted by the salt and alum applied to them to preserve them, these measurements are unsatisfactory, being obviously much too small, since two pregnant females, measured by Mr. Ward in the flesh, give a length respectively of 7 feet and 7 feet 4 inches; while a roughly cleaned, ligamentary adult male skeleton measures 7½ feet. The flat skin of a young specimen, only a few days old, measures 3 feet 6 inches; and an unborn fœtus, measured by Mr. Ward in the flesh, gave a length of 2 feet 9 inches.

The following detailed measurements of a pregnant female, measured in the flesh, are kindly furnished by Mr. H. L. Ward:

Tip of nose to end of tail	2,140 mm.
" " " hind limbs	2,390 "
Extent of outstretched fore limbs	1,170 "
Length of manus	300 "
Breadth "	200 "
Length of pes	320 "
Breadth of pes at tarsus	100 "
" " at end of phalanges	450 "
End of nose to eye	120 "
Distance between eyes	90 "
Circumference of body at axillæ	1,700 "
" " at hips	640 "
" of head at ears	67 "

Doubtless adult males will range in length, in the flesh, from 7 to 8 feet, measured from the point of the nose to the end of the tail, and from about 7 feet 6 inches to 8 feet 10 inches from the nose to the end of the outstretched hind flippers, the latter measurement being about 10 inches greater than the length from tip of nose to end of tail.

OSTEOLOGICAL CHARACTERS.—The skeleton of *Monachus tropicalis* indicates an animal of robust form and great strength, its bony framework being very heavy, and the processes for muscular attachment well developed. The species most strictly comparable with it in general form (excepting of course *M. monachus*), is the common Harbor Seal (*Phoca vitulina*); in size it is quite equal to the Bearded Seal (*Erignathus barbatus*), from which latter, however, it differs notably in the relative size of different parts, as will be presently shown.

Skull (Pl. II).—The brain-case is broad and somewhat depressed, the interorbital region broad and considerably arched; the prefrontal region sloping, but very broad, to give place for the very heavy dentition, the breadth of muzzle being exceptionally great in proportion to the general breadth of the skull. The zygomata are strongly developed and well arched, the breadth at the most expanded part of the zygomatic arches being considerably greater than at the mastoid processes. The anterior nares are broad and rather low, owing to the depression of the prefrontal outline of the skull. The posterior nares are broad, and much vaulted. The paroccipital processes are strongly developed, in aged individuals attaining a length of 14 to 20 mm. The occipital crests become strongly developed in old individuals, in which also the sagittal becomes well marked. There is also in old age a quite distinct frontal process. The mastoid region is rather weakly produced, and the auditory bullæ are unusually small and depressed, being not only relatively but absolutely much smaller than in *Phoca vitulina*, or even in *Phoca fœtida*. The (relatively) slightly expanded bulla presents, in the adult, a gradually sloping anterior and inner border, strongly in contrast with the abrupt, nearly vertical corresponding borders in most other Phocids, and is further exceptional in the position of the foramina on its inner wall, which it situated at the inner posterior angle, and opens posteriorly, instead of perforating the inner wall at a considerable distance from its posterior end, as in *Phoca*, *Halichœrus*, and *Erignathus.* The palatine bones are broadly expanded anteriorly, and join the maxillaries by a nearly straight transverse suture ; posteriorly they are deeply and triangularly emarginated, the excavation extending considerably more than one-half the distance from the pterygoid hamuli to the palato-maxillary suture, instead of much less than one-half, as is the case in *Phoca vitulina*, *P. fœtida*, *P. grœnlandica*, *Erignathus barbatus*, and the other true Phocids generally. The pterygoid hamuli are well produced, but thin, flat, and directed laterally.

The chief structural peculiarity of the anteorbital portion of the skull is the extension of the malar upon the maxillary, the nearly closed and apparently half-obliterated anterior palatine foraminæ, and the extension backward in a narrow sharp angle of the palatal surface of the premaxillaries. The nasals are relatively very narrow, quite as narrow in front as in average specimens of *Phoca vitulina*, and taper nearly uniformly to a point.

The lower jaw (Pl. II, figg. 5, 6) is remarkable, as already noted by Messrs. True and Lucas (l. c.), for the very low position of its condyle, the lower border of which is on a level with a line through the points of the molar teeth. The lower border of the ramus, posteriorly, is rolled outward, instead of inward as in most Phocids ; the angle is but little produced and arises mainly from the inner border of the ramus ; the coronoid is strongly developed, a little recurved, and turned somewhat outward. The symphysial portion of the jaw is thick and heavy, the symphasis quite extended and firm, and in old age the two rami appear to become firmly united.

The subjoined table gives detailed measurements of two adult and one very young skull, and with them, for purposes of comparisons, the corresponding measurements of adult skulls of *Monachus monachus*, *Phoca vitulina*, *Erignathus barbatus*, and *Cystophora cristata*, the measurements of *M. monachus* being from Cuvier.*

---

* Ossem. fossiles, Vol. V, pt. 1, 1823, pp. 228, 229.

MEASUREMENTS OF THE SKULL.

	M. tropicalis.				M. monachus.	E. barbatus.	P. vitulina.		C. cristata.
	♂	♀	♀	○	♀		♀	♂	♂
Total length from posterior border of occipital condyles to anterior border of premaxillaries	280	270	(?)193	175	(?)282	223	212	232	283
Distance from anterior border of premaxillaries to nasals	45	46	...	37	...	44	30	35	80
" " " " frontals	90	88	45	64	91	92	52	63	130
" " " " pterygoid hamuli	150	146	....	90	....	180	110	125	175
" " " " posterior edge of last molar	96	90	....	67	....	76	72	80	95
" " " " posterior wall of maxillary condyle	200	183	....	114	....	155	140	154	200
" " " " palato-maxillary suture	96	98	...	60	....	82	72	78	120
Length of palatine bones	100	90	....	50	....	69	59	71	....
Width of palatines at anterior border	65	60	....	40	....	48	34	41	62
Length of nasal bones	62	68	....	47	....	60	59	57	70
Width of nasal bones at front border	23	20	....	16	....	23	20	18	35
Width of skull at greatest expansion of zygomatic arches	177	170	122	108	215	113	126	129	235
" paroccipital processes	115	115	....	86	....	101	78	78	117
" mastoid "	165	155	....	107	....	132	122	128	183
Least width of interorbital region	32	31	25	22	32	25	13	12	42
Width of muzzle at base of canines	60	56	45	41	78	48	40	43	71
Width of posterior nares at pterygoid hamuli	36	38	....	26	....	36	27	27	60
Width of anterior nares, transversely	41	38	...	23	...	33	29	26	65
" " vertically	29	31	....	23	...	24	29	26	56
Length of interorbital region (from fronto-maxillary suture to brain-case)	80	80	....	40	...	41	41	42	75
Length of zygomatic foramen	76	74	....	38	....	41	50	53	57
Width of " "	55	55	....	31	....	35	48	42	66

MEASUREMENTS OF THE SKULL.—*Continued.*

	M. tropicalis.				M. monachus.	E. barbatus.	P. vitulina.		C. cristata.
	♂	♀	♀	○	♀		♀	♂	♂
Length of superior incisor series	28	29	....	22	....	28	24	23	35
" " molar series	68	66	60	48	65	52	45	49	55
Distance between outer borders of 1st upper molar	45	44	35	28	48	42	33	34	55
" " 5th "	85	78	63	62	84	70	58	59	80
Width of foramen magnum	30	30	33	30	27	30	30	30	35
Height "	20	20	27	26	23	31	26	26	24
Width (transverse) of occipital condyles	70	69	...	55	....	69	58	63	70
Length of auditory bulla	43	43	....	32	....	43	53	57	78
Width "	43	43	....	32	....	47	43	45	75
Height of skull at occipital condyles	86	89	70	77	96	87	80	85	118
" " pterygoid hamuli	80	85	....	60	....	87	70	74	117
Total length of lower jaw	195	185	134	110	210	153	133	145	193
Distance between outer borders of coronoid processes	124	121	89	84	161	97	....	94	127
" outer edges of condyles	158	150	112	100	190	134	....	116	163
Width of condyle	38	37	....	20	46	30	....	29	48
Distance between front edge of lower jaw and posterior edge of last molar	88	85	...	56	....	69	61	64	65
Distance between last molar and posterior edge of condyle	103	100	....	46	...	86	75	86	122
Depth of lower jaw at coronoid process	78	78	(?) 45	43	102	65	57	72	112
Distance between angle of jaw and upper surface of condyle	39	41	27	20	63	64	...	...	76
Height of coronoid process	40	35	....	19	....	38	25	26	27
Depth of jaw at last molar	34	28	...	20	....	23	21	23	31
" jaw at third molar	35	29	....	19	....	....	21	22	28
Length of symphasis	54	50	37	35	58	60	21	24	....
Width of jaw in front at canines	36	34	27	20	51	25	25	25	34
Length of incisor series	22	19	....	12	...	10	16	14	17
" molar series	67	64	60	54	54	48	42	45	48

Teeth.—The dentition in *Monachus* constitutes one of the most striking features of the genus, not only in respect to the large size of the teeth, but to the incisive formula, which is $\frac{2-2}{2-2} = \frac{4}{4}$, instead of $\frac{3-3}{2-2} = \frac{6}{4}$, as in the other genera of the Phocinæ. In form the teeth (Pl. II, figg. 1, 3, 5, 6, and Pl. IV, fig. 1) may be considered as an exaggeration of the type seen in *Phoca vitulina*, being of the same general character but disproportionately more massive. The molars are closely and somewhat obliquely implanted, the inner front edge of one passing by the hinder edge of the one standing next in front of it.

The outer upper incisors stand vertically, and are two to three times the size of the intervening pair, which, in old specimens, are often considerably inclined inward. The canines are very large, but not otherwise peculiar. Of the five molars, the three middle ones are much the largest, the first and fifth being small in comparison with the others. The third molar is slightly the largest, the second, fourth, first, and fifth successively decreasing in size. The first is about twice the size of the fifth. The first four have each a main or principal cusp, with a smaller accessory one in front of it, and two behind it. In unworn teeth the main cusp is much more pointed and higher in the second, third, and fourth than in the first. The fifth has but three cusps, of which the two anterior ones are most pronounced. All the molars are double-rooted except the first; are provided with a heavy cingulum, and in unworn teeth the crown-surface of all the teeth is minutely rugose. (Pl. IV, fig. 1, represents the upper teeth of the right side, one-half natural size, as seen in a half-grown male.)

The lower teeth are in general similar in conformation to the upper, but smaller. The two middle incisors are implanted behind the line of insertion of the outer pair, and are directed more or less forward, in some instances nearly horizontally so. The first molar is very much smaller than the fifth, which is but little smaller than the fourth. The unworn molars show the same number of cusps as the corresponding upper ones.

In old age the teeth become very much worn, the cusps becoming nearly or quite obliterated, and the crown surface loses in a great degree its rugose character.

The following measurements (in millimeters) indicate the average size in fresh unworn teeth :

	UPPER SERIES.			LOWER SERIES.		
	Height of Crown.	Length of Crown.	Width of Crown.	Height of Crown.	Length of Crown.	Width of Crown.
Canine	14	13	11	14	11	9
Outer incisor....	8	9	8	5	6	5.5
Inner incisor....	7	6	5	5.5	4	4.5
First molar......	7	10	8	6.5	10	7
Second molar ...	9	15	10	8	15	9.5
Third molar.....	9.5	15	10	8	16	9
Fourth molar ...	8	14	10	9	15	10
Fifth molar	5.5	10	7.5	7	12	8.5

The spacing of the molars is somewhat irregular. In some specimens there is a well-marked interval between the first and second ; occasionally the interval is between the second and third, but often there is no interval between any of the teeth, which are generally crowded, but are sometimes slightly separated, just as in the case in *Phoca vitulina*.

In the skull of a young individual (Pl. III) only three or four days old,* the milk-teeth have disappeared, but none of the permanent teeth have cut the gum. All, however, are visible. The tooth most advanced is the last molar on each side, which in both jaws had already pushed its crown slightly above the alveolus. The two middle incisors are also just pricking through the gum, considerably in advance of either the outer incisors or the canines. This skull, it may be added, presents the usual embryonic aspect, particularly in the relatively large size of the brain-case, the swollen and well-rounded bullæ, the large size of the foramen magnum, and the low position of the mandibular condyle, which is much lower even than in the adult. In this young specimen the auditory bullæ have nearly the form seen in adult examples of *Phoca vitulina*.

The following table gives the ratios of the length of the different regions of the skull to the total length of the skull, the latter being considered as 100.

---

*Detailed measurements of this skull are given in the table of skull measurements on pp. 8 and 9.

	M. tropicalis.		M. monachus.	E. barbatus.	P. vitulina.	C. cristata.
	♂ ad.	o				
Prefrontal region to total length of skull	32	36.6	33	41	30	46
Interorbital region to total length of skull	28.5	22.9	......	18.6	18	26.2
Distance between front edge of intermaxillaries and palato-maxillary suture to total length of skull	34.3	34.7	......	36.8	33.6	42.4
Distance from front edge of intermaxillaries to pterygoid hamulus, to total length ...	53.6	51.4	......	58.3	54	62
Greatest width to length.....	60	60	77	50.7	56	83
Height to length.	30.7	44	34	34.9	36.6	41.7

Skeleton.—The skeleton of *Monachus tropicalis* presents several striking peculiarities, as compared with the skeleton in other Phocids, the pelvis being extremely short, the scapula very short and very broad, the humerus short and peculiarly formed, etc. Excepting in the shortness of the sacral region, the axial skeleton differs in respect to the development of the different vertebral regions very little from the skeleton of *Erignathus barbatus*, with which it agrees very closely in general size. The anterior portion of the thoracic cavity is, however, more expanded, and the vertebræ are rather heavier, particularly through the greater development of the apophysial elements. The agreement is much less close with *Phoca vitulina*, in which the dorsal segment is relatively short, and the cervical and cranial segments long. The following table shows the ratios of the length of the different regions of the axial skeleton to its whole length, the total length of the skeleton, including the skull, being considered as 100.

	M. tropicalis.	E. barbatus.	P. vitulina.
Skull to the whole skeleton........	12.4	10.5	15.0
Cervical vertebræ to the whole skeleton......	12.4	11.3	14.6
Dorsal " " "	36.4	36.4	31.0
Lumbar " " "	16.8	16.9	15.0
Sacral " " "	5.0	8.4	8.0
Caudal " " "	16.8	16.0	16.0

The vertebral formula is as follows: Cervical vertebræ, 7; dorsal, 15; lumbar, 5; sacral, 3; caudal, 11; total, 41. I have found the number of caudal vertebræ to vary in different species of Phocids from ten to fourteen, but the number of the sacral is nearly uniformly four; I have found three in only *Phoca grœnlandica** and the present species.

The scapula (Pl. III, figg. 4, 5) is very unlike that seen in any other genus of Phocids, but is nearest in general form to that of *Cystophora cristata*, and most unlike that of *E. barbatus.* The infra-acromial portion, or shaft, is short, and, compared with that of either *P. vitulina* or *C. cristata*, presents nothing peculiar. The acromion process, sometimes much reduced or even absent in the Phocids (there is no trace of it in *Erignathus*), is strongly developed, rising to a height (above the blade) of 23 mm., with a length of 22 and a thickness of 6 mm.; it is slightly recurved. The spine is represented by a broad shelving ridge, rapidly falling away from a height of 15 mm. just above the acromion process to the level of the general surface of the blade 30 mm. from its superior border. Instead of being a thin, vertical plate of bone as in the allied genera it is merely a broad low ridge. The total length of the scapula is 160 mm.; its extreme breadth, 278 mm. The pre-scapular portion is greatly produced, its greatest development being at the lower border at a point in line with the lower edge of the acromion process. The post-scapular portion is also strongly developed, extending backward in a long angular point; its lower border is nearly straight (not recurved toward the point as in *P. vitulina* and most other Phocids), while the whole upper border is gently arched. The form of the scapula is therefore much less sickle-shaped than in most other Phocids, and its superior border is more evenly and uniformly rounded throughout its extent. It most nearly resembles, in general form and proportions, the scapula of *Cystophora cristata*, which is not only short but has the pre-scapular portion greatly developed, its breadth quite equaling that of the post-scapular portion. The following table indicates the ratios of the breadth of the scapula to its length, and of the pre- and post-scapular portions to the length, in the three species in mention.

---

* See N. Am. Pinn., 1880, p. 570.

	M. tropicalis.	P. vitulina.	E. barbatus.
Length of scapula to breadth......	1 to 1.793	1 to 1.417	1 to 0.754
" " to pre-scapular fossa..	1 to 0.621	1 to 0.417	1 to 0.267
" " " post-scapular fossa.	1 to 1.103	1 to 0.833	1 to 0.427

The humerus (Pl. III, figg. 6-8) is rather short for the size of the animal, being about one-tenth shorter than in *E. barbatus ;* it is very stout, and more or less peculiar in all the details of its configuration. It differs strikingly from all other Phocids through the absence of the supra-condylar foramen, of which there is no trace, it agreeing, however, in this respect with the Otaries. The internal tuberosity is low, barely rising to the height of the head ; it is thick both antero-posteriorly and transversely, and extends downward for only about one-third the length of the shaft, instead of for one-half the length, as is usually the case. The external tuberosity is likewise low, and the superior external angle is low and rounded, not produced into a high protuberance as in *Phoca* and *Erignathus*, neither is the outer wall deeply excavated as in those genera, but uniformly convex and evenly rounded over to the body of the shaft. The deltoid ridge, however, is strongly developed and continued nearly the whole length of the shaft. The bicipital groove is broad, shallow, and not at all covered, or narrowed externally by the approach of the outer borders of the tuberosities, which partly inclose it in *Phoca* (see Pl. III, fig. 9) and *Erignathus*. The distal extremity is very thick, being relatively but little flattened antero-posteriorly. The external condyle is but slightly produced, being very short, and projecting but one or two millimeters beyond the border of the trochlea ; the internal condyle recedes from the edge of the trochlea before expanding, and then becomes strongly developed, being quite as thick as the shaft itself, but, as above stated, presents no trace of a supra-condylar foramen. The ulnar border of the trochlea forms a high, thin ridge. There is also a distinct anconeal fossa—a further peculiarity not usually seen in Phocids.

In general form the humerus presents an unexpectedly close agreement with that of *Cystophora cristata*, a species from which it is widely separated by its dentition and cranial characters. In

C. cristata, however, there is the usual supra-condylar foramen, but in other features the differences are those which distinguish the humerus of *C. cristata* from this bone in *Phoca* and *Erignathus*, on, however, an exaggerated scale.

In regard to the bones of the forearm, the anconeal process of the ulna is short but very broad, with the superior border distinctly hollowed, instead of strongly convex as in *Phoca* and *Erignathus*. The radius presents no special modifications.

The manus is relatively very long, broad, and strong. The second digit is slightly longer than the first and third, which are equal; the fourth is a little shorter, and the fifth is much reduced, being little more than two-thirds the length of the fourth. The metacarpal and the first phalanx are both greatly lengthened in the first in comparison with those of the other digits, this being the chief peculiarity of the manus in the present species.

The relative length of the fore limb (excluding the scapula) to the length of the skeleton in the three species under mention is as follows: in *Monachus tropicalis* as 23 to 100; in *Erignathus barbatus* as 22.2 to 100; in *Phoca vitulina* as 25.3 to 100; the fore limb being relatively longest in *P. vitulina*. The relative length of the humerus and forearm is practically the same in each, but the manus is relatively considerably longer in *M. tropicalis*, as shown by the following table of ratios:

	M. tropicalis.	E. barbatus.	P. vitulina.
Humerus to fore limb	30 to 100	33.3 to 100	31.3 to 100
Radius "	28 to 100	29 to 100	29 to 100
Manus "	48 to 100	37.8 to 100	40 to 100

The pelvis (Pl. IV, figg. 3-5) in *M. tropicalis* presents many peculiar features, the most striking of which is its shortness in comparison with that of other Phocids. The length of the pelvis in this species is the same as in *Phoca vitulina**—an animal not half its size—and only two-thirds as long as in *Erignathus barbatus*, which is an animal of practically the same size. In consequence of the large size and stout form of the body, the iliac portion of the pelvis is broadly expanded, the ilia being broad and thick, with the border much everted. Behind the acetabula the pelvis narrows rapidly, the pubic bones converging abruptly and strongly opposite the middle of the thyroid foramen. The ischia are thin and narrow, being but little heavier than in *P. vitulina*, with only a thin rim of bone below the thyroid foramen—less than half as broad as in *P. vitulina*. The transverse breadth of the ilium nearly equals its length ; the eversion of the iliac bones is much less abrupt than in allied forms, the external face of the bone standing at about an angle of 45° with the axis of the body. This surface is flat—not deeply excavated, as in *P. vitulina* and some other species, nor even hollowed, as in *E. barbatus*. The ischia, except in slenderness, differ little from what is seen in *P. vitulina*. The pubes are well developed, and have the internal anterior border flattened and produced, nearly meeting for some distance in front of the symphasis, which is unusually extended and heavy ; the pectineal tubercle is well developed. The thyroid foramen is remarkably broad, being more than half as broad as long (in *P. vitulina* it is about three times as long as broad), the posterior end very abruptly rounded, instead of gradually narrowed, as in other Phocids. As already noted, only three vertebræ are anchylosed to form the sacrum.

---

* In *Phoca vitulina* the pelvis is short in comparison to its length in *P. grœnlandica* and *P. fœtida*. (See N. Am. Pinn., 1880, p. 568.)

The femur shares the remarkable shortness of the pelvis, this bone being not longer than in *P. vitulina !** The shaft is of nearly the usual form, being very much flattened antero-posteriorly, but very thick, and but slightly constricted. The greater trochanter is very large, with its outer extremity greatly and unusually thickened ; there is no trace of the usual digital fossa, so strongly developed in *P. vitulina*. The distal extremity is greatly broadened through the strong development of the tuberosities, which extend upward for half the length of the shaft. The intercondylar notch is rather shallow ; the articular surface of the condyles is very broad and unusually flat, particularly that of the inner one.

The second segment of the limb—the tibia and fibula—is likewise rather short, being but little longer than in *P. vitulina* (which species even is rather exceptional in this respect), and much shorter than in *E. barbatus*, or even *Phoca grœnlandica*. The bones themselves offer little that is peculiar; the proximal portion of the posterior face of the tibia, however, is comparatively but slightly hollowed.

---

* The femur in *P. vitulina* is relatively even shorter than in either of its congeners, showing further the exceptional shortness of this bone in *M. tropicalis*.

The pes is of medium length, being little shorter than in *E. barbatus*. Its chief peculiarity is the shortness of the third digit, which is only about three-fourths the length of the first, giving a deeply emarginate border to the foot. The digits, in order of length, measure as follows: I, 265 mm.; V, 260 mm.; II, 230 mm.; IV, 215 mm.; III, 180 mm. The first digit is, as usual, much thicker than the fifth.

The hind limb, considered as a whole, is exceptionally short, the ratio of its length to that of the whole skeleton being as 34.4 to 100, the same ratio in *Erignathus barbatus* being as 38.4 to 100, in *Phoca vitulina* as 40.4 to 100, and in *Phoca grœnlandica* as 41.5 to 100. It is even actually shorter than in *Phoca grœnlandica*, a much smaller animal.

The relative length of the different segments of the limb to the length of the whole limb in several of the Phocids (*Monachus tropicalis*, *Erignathus barbatus* and *Phoca vitulina*) is as follows, the length of the limb being considered as 100:

	M. tropicalis.	E. barbatus.	P. vitulina.	P. grœnlandica.
Femur to hind limb..........	17	18	20	16
Tibia " "	33	35.8	34.4	37.7
Pes " "	50.8	45	46.4	46.3
Pelvis " "	33.8	38	34	34
Femur to pes	33	40	41.4	31.6

In *M. tropicalis* a very short femur is thus correlated with a long pedal member.

The following table gives detailed measurements of the skeleton in *M. tropicalis*, *M. monachus*, *Phoca vitulina*, *P. grœnlandica*, and *Erignathus barbatus*, the measurements of *M. monachus* being taken from Cuvier.*

---

* Ossem. fossiles, Vol. V, pt. 1, 1823, pp. 229–231.

MEASUREMENTS OF THE SKELETON.

	M. tropicalis.		M. monachus.	P. vitulina.	P. grœnlandica.	E. barbatus.	
	♂	♀				♀	
Total length of skeleton, including skull	2180	2066	2345	1440	1630	2195	2010
Length of skull	280	270	282	220	210	230	225
" cervical vertebræ	270	263	288	210	240	250	230
" dorsal "	790	750	830	445	510	800	760
" lumbar "	366	378	350	216	255	390	340
" sacral "	110	125	150	120	100	175	160
" caudal "	365	380	340	230	317	350	295
" first rib (osseous portion only)	76	83	....	....	....	....	58
" third rib "	190	145	....	....	....	....	165
" sixth rib "	270	250	....	....	....	....	270
" tenth rib "	295	290	....	....	....	....	275
" twelfth rib "	265	250	....	....	....	....	272
" fifteenth rib "	200	193	...	..	....	....	140
" sternum, including cartilagineous extremities	660	580	....	....	....	....	....
" " osseous portion only	470	403	..	....	....	....	....
" scapula	160	160	163	135	152	210	197
Breadth of "	278	236	(?)266	....	....	....	130
Height of acromion process	24	22	19	....	....	....	0
Length of fore limb (without scapula)	530	538	....	480	550	487	480
" humerus	150	155	146	165	123	162	165
" radius	140	143	140	137	130	140	137
" manus	240	240	....	145	145	185	190
Length of 1st digit (including metacarpal)	202	203	202	....	....	....	....
" 2d " "	195	200	190	....	....	....	....
" 3d " "	180	180	180	....	....	....	....

MEASUREMENTS OF THE SKELETON.—*Continued.*

	M. tropicalis.		M. monachus.	P. vitulina.	P. grœnlandica.	E. barbatus.	
	♂	♀				♀	
Length of 4th digit (including metacarpal)	160	160	162	....	....	...	....
" 5th " "	123	124	134	....	...	....	....
" pelvis	225	240	234	200	255	320	300
Distance between outer borders at iliac crests	220	228	218	....	....	....	....
Breadth of pelvis at proximal border of acetabula	140	145	....	....	....	....	....
" pelvic basin at proximal end of sacrum	70	69	....	....	....	....	....
" " posterior distal angle of ischia	50	25	....	....	....	....	....
" " ischiac tuberosities	52	65	59	....	...	....	...
Length of ilium	70	70	70	....	....	....	....
" ischium	150	165	....	...	....	....	....
" thyroid foramen	95	110	90	....	...	....	...
Breadth of "	50	48	50	....	...	....	....
Length of symphasis	40	30	26	....	....	...	....
" os penis	167	....	....	....	...	....	...
" hind limb	655	665	....	582	677	843	750
" femur	110	110	168	112	109	153	152
" tibia	225	215	236	200	255	310	274
" pes	320	340	....	270	313	380	395
" tarsus	70	75	....	....	....	....	80
Breadth of "	55	60	....	....	....	....	43
Length of 1st digit (including metatarsal)	265	254	257	....	....	....	320
" 2d " "	230	220	218	....	....	....	255
" 3d " "	180	182	172	....	....	....	250
" 4th " "	215	210	218	....	....	....	245
" 5th " "	260	260	276	....	...	....	287

SEXUAL DIFFERENCES.—As already stated, in external characters the sexes differ very little, the females being apparently little if any smaller than males of corresponding age. In the skeleton the bones are a little lighter and slenderer in the female than in the male, but there is little difference in the linear measurements of the entire skeleton or of any of its parts. The two skeletons before me are both fully adult, but the male skeleton is evidently that of a somewhat older animal than the other. The bones of the female are throughout not only somewhat slenderer than in the male, but the crests of the skull are less developed, and the suprascapular epiphysis is less ossified. It is thus evident that the female skeleton would have become heavier in old age, and the differences now perceivable have become much diminished. The pelvis, however, is evidently much slighter in the female than in the male, regardless of any differences due to age, the pubic bones being much lighter in the female, and the pubic symphasis less extended, while the ischia are reduced to about one-third of their development in the male, they being simply slender, flattened rims of bone bounding the thyroid foramina. (See Pl. IV, fig. 5). This is the only clearly marked sexual difference in the two skeletons under consideration.

There are other differences that are obviously individual, as in the scapula, which in the male is less symmetrically developed than in the female, showing deficient ossification at its suprascapular edge, particularly along the superior border of the prescapular fossa. Another difference which may be sexual, but is more probably individual, is seen in the axial skeleton, in which the cervical and dorsal series of vertebræ are 27 mm. longer in the male than in the female, while the lumbar, sacral and caudal are together 42 mm. shorter than the corresponding series in the female, the caudal series being not only longer in the female but containing two more vertebræ. The dorso-cervical portion of the vertebral series is thus relatively somewhat shorter, and the posterior portion much longer in the female than in the male in the two examples under consideration.

COMPARISON WITH ALLIED SPECIES.—The only species at all closely related to *Monachus tropicalis* is its single known congener, the *M. monachus* of the Mediterranean and adjoining seas. So far as can be judged by descriptions of the latter, the resemblance in size and external characters is very close. The skeleton, judging by Cuvier's plate* of *M. monachus*, presents several notable points of difference, although it must be premised that the skeleton figured by Cuvier was that of a very old individual, in which the crests and processes of the skull were well developed—much more so than in my examples of *M. tropicalis*--and the teeth much worn. But there are other tangible differences with which age can have little to do. In *M. monachus*, for instance, the fifth upper molar is decidedly smaller than the first, while just the reverse of this occurs in *M. tropicalis*. Again, the lower jaw is much heavier in *M. monachus*, the ramus being much deeper and thicker, and the coronoid process very much higher and broader. This may be due partly, but probably not wholly, to greater age. There is also a well-marked difference in the relative length of the fifth digit of the manus in the two species, this digit being relatively about one-fourth longer in *M. monachus* than in *M. tropicalis*, as shown by both Cuvier's measurements and his plate. Another striking difference is seen in the sacrum, which in *M. tropicalis* consists of only three anchylosed vertebræ, and in *M. monachus* of four. In neither of my specimens of *M. tropicalis* would a fourth vertebra have ever become anchylosed to the third sacral, while it is evident that the sacral vertebræ are unquestionably four in the specimen of *M. monachus* figured by Cuvier.† The caudal vertebræ vary in number in my two examples of *M. tropicalis*, there being only 11 in the male and 13 in the female ; there are 12 in Cuvier's specimen of *M. monachus*.

In respect to the skeleton in general, Cuvier's example of *M. monachus* is more heavily ossified than either of my examples of *M. tropicalis*, the tuberosities for muscular attachment being more strongly developed throughout in correlation with the heavy sagital and occipital crests and processes of the skull, a difference more or less attributable to differences of age. In all other respects Cuvier's figures of the osteology of *M. monachus* would serve equally well for that of *M. tropicalis*.

---

* Ossem. fossiles, V, pt. i, pl. XVII.

† This difference is evidently not of great importance, since the number of sacral vertebræ is found to sometimes vary in individuals of the same species; while one species of *Phoca* (*P. grœnlandica*) has normally only three sacral vertebræ and its congeners normally four.

AFFINITIES OF THE GENUS MONACHUS.—The osteology of the genus *Monachus* presents a few features slightly recalling the structure of the Otaries. This is more especially seen in the general form of the skull, as well as in its strongly developed crests and processes, and the robust character of the skeleton in general, and especially the strong vertebral processes, and also in the absence of the supra-condylar foramen of the humerus, found, so far as I am aware, in all other Phocids. These resemblances are, however, slight and superficial, in comparison with the radical differences which separate trenchantly the Otaries from the Phocids. They merely seem to give to the genus *Monachus* a rather specialized character and a rather higher order of structure than is seen in any other Phocine genus. As already noted, the form of the scapula and humerus in *Monachus*, in general features, is more like what is seen in *Cystophora* than in any member of the subfamily Phocinæ ; from which, however, in cranial and many other features it is more widely separated than any other genus of the Phocids. In cranial characters and dentition (the dental formula aside), *Monachus*, compared with the Northern Phocids, is most nearly related to *Phoca*, of which it almost seems to be an exaggerated type. The principal bones of the limbs, however, differ exceedingly in details of structure from those of either *Phoca* or *Erignathus*.

In respect to cranial characters, and in some external details—as the elongation of the outer toes of the pes and the absence of well-developed nails in the posterior digits—*Monachus* approaches the Antarctic Phocids, which seem to differ quite as much from each other as some of them do from *Monachus*. In all the peculiar form and reduced size of the auditory bulla closely conforms to what is seen in *Monachus;* there is the same prolongation backward of the malar process of the maxillary, the similar deep emargination of the bony palate, and the same incisive formula $\left(\frac{2-2}{2-2} = \frac{4}{4}\right)$. The general form of the skull is also similar to that of *Lobodon* and *Ogmorhinus*. The essential characters of the Ogmorhininæ (= Stenorhynchinæ of authors*) are thus found in *Monachus*, with which group it seems to be more intimately related than with the Phocinæ. Its association by some German writers, as notably Wagner and Giebel, with the Antarctic Phocids is thus not without reason, *Monachus* certainly standing more aloof from the Phocinæ than from the Ogmorhininæ. Gray made of it a distinct 'tribe' or subfamily, a group of coördinate rank with the Phocinæ and Cystophorinæ.

---

* The genric name *Stenorhynchus*, formerly applied to *Phoca leptonyx* of Blainville, being untenable in mammalogy, through prior use in carcinology and entomology, the subfamily name based thereon also lapses. See A. O. U. Code of Nomenclature, p. 25, Canon V.

GENERAL HISTORY.—The West Indian Seal was doubtless the first American species of Seal met with by the explorers of the New World, it having been killed for food by Columbus's sailors during his voyage to the West Indies in 1494.* It must have been well known to the buccaneers of the seventeenth and eighteenth centuries, and during the eighteenth century, according to Dampier, was the basis of a profitable Seal fishery. As will be shown later, its destruction for its oil seems to have been carried so far as nearly to exterminate the species, only the remnants of once populous colonies, confined to remote keys and reefs, having survived the ravages of the oil hunter.

Dampier, Sloane, and other early writers who refer to the species give no description of the animal, specimens of which seem not to have come under the observation of naturalists till near the middle of the present century. The first explicit account of its size and external appearance was published by Mr. Richard Hill, in the "Jamaica Almanack for 1843"—a popular, ephemeral publication, now almost inaccessible. Mr. Hill's account, however, was republished by Mr. Philip Henry Gosse in 1851, in his work entitled "A Naturalist's Sojourn in Jamaica," who added some further account of the species. Mr. Hill's specimen was a young one, only about four feet in length, which he had opportunity of observing for a time in confinement. It was taken on the Pedro Kays, a reef of rocks lying off the south coast of Jamaica. In the spring of 1846 an adult male was obtained at the same locality by Mr. George Wilkie, who presented it to Mr. Gosse, by whom it was later sent to the British Museum. A description of this specimen is added by Mr. Gosse to the account of the young one given by Mr. Hill.

---

* Near the end of August, 1494, Columbus came to anchor off the southern coast of Hispaniola, near the rocky islet of Alta Vela. "Several seamen were ordered to climb to the top of the island, which commanded a great extent of ocean, and to look out for the other ships.... On their return, the sailors killed eight sea wolves, which were sleeping on the sands."—*Irving's Life and Voyages of Columbus*, revised ed., Vol. I, 1848, p. 434.

In 1849, two years before the publication of Mr. Gosse's above cited work, Dr. J. E. Gray referred to the specimen Gosse had presented to the British Museum; he spoke of it as an imperfect skin, without any bones, and described the appearance of the whiskers. He referred to the specimen merely incidentally,[*] without describing or naming it. The following year (1850), Dr. Gray formally described the species as "*Phoca tropicalis.* Jamaica Seal,"[†] basing the name and description on the "Skin, imperfect, without skull," referred to (as above stated) in his paper of the previous year. No reference is made to Mr. Gosse, nor to any previous description, Mr. Gosse's book on Jamaica not having at that time appeared.

Mr. Gosse, in his work already cited, published in 1851, proposed "the trivial name of *Wilkianus* for the species, in honour of George Wilkie, Esq.," to whose courtesy he was indebted for "the skin of an adult specimen, shot by himself." The name, however, was not only antedated by *tropicalis* of Gray, but was further untenable from Mr. Gosse having failed to refer the species to any genus. He says, "From Mr. Hill's description it appears to have the incisors and nailless hind feet of *Stenorhynchus*, with the molars of *Calocephalus.* The data are perhaps not sufficient to warrant the formation of a new genus, but I may be permitted to propose" etc. (the trivial name as above cited).

In 1866 Dr. Gray referred[‡] his *Phoca tropicalis* to the genus *Monachus*, republishing his original description of the species without change, but remarking, under the genus *Monachus*, "As the other subtropical Seal, *Phoca tropicalis* (Gray, Cat. Seals, B. M. 28), from Jamaica, described from an imperfect skin without a skull, has similar small smooth whiskers [as *M. albiventer*], it may very probably, when its skull has been examined, be found to belong to this genus, which will then prove to be a subtropical form of the family."[§]

Up to this time Dr. Gray had nowhere cited the accounts of either Hill or Goss, but in his "Additions and Corrections" to the work now under notice (op. cit., pp. 367, 368), he not only cites both Hill and Gosse, but quotes the descriptive portions of their accounts as given in Gosse's "Naturalist's Sojourn in Jamaica"—not however under *Monachus tropicalis* but under *Cystophora antillarum!*—thus completing most effectually the muddle he had previously brought about in relation to the West Indian Seals, of which he persistently recognized two species, referring one of them to *Cystophora* and the other (latterly at least) to *Monachus*.

---

[*] On the variation of the Teeth of the Crested Seal, *Cystophora cristata*, and on a new species of the genus from the West Indies. < Proc. Zool. Soc. London, 1849, pp. 91-93.

[†] Catalogue of the specimens of Mammalia in the Collection of the British Museum. Part II, Seals, 1850, p. 28.

[‡] Catalogue of Seals and Whales in the British Museum, 1886, p. 20.

[§] This shrewd conjecture has since been amply confirmed, although the West Indian Seal continued for nearly twenty years to be only provisionally referred to the genus *Monachus*.

As I have already shown at length,* Gray's *Cystophora antillarum*, first named in 1849,† was based on a stuffed skin and a skull of a very young specimen of *Cystophora cristata*, erroneously supposed to have come from the West Indies, and later affirmed to have been presented by Mr. Gosse. Hence doubtless his reference in 1866 of Hill's and Gosse's accounts to his mythical *Cystophora antillarum*, as above noted. In his first account of *C. antillarum* he refers also to the "imperfect skin" received "from Jamaica," which later became the type of his *Phoca tropicalis;* he thus referring in his first account to *three* specimens of Seals from the West Indies, which later were all credited to Mr. Gosse. Mr. Gosse, however, has assured me, in a letter already published,‡ "that Dr. J. E. Gray was in error, in supposing that more than *one species* [specimen] was actually delivered to the British Museum, from Jamaica," by him, this being the skin mentioned in his "Naturalist's Sojourn in Jamaica."

The next notice of importance relating to the West Indian Seals, following Dr. Gray's several accounts, was my *résumé* of the subject published in 1880,§ in which all the previous accounts were passed under analytical review, and the confusion in relation to the occurrence of two species of Seal in the West Indian seas in a measure cleared away. Although no specimens came under my notice, the literature of the subject was summarized, and some new matter added in relation to its distribution and former abundance. The species was provisionally assigned to *Monachus*.

---

* See Hist. N. Am. Pinnipeds, 1880, pp. 715-720.

† Proc. Zool. Soc. Lond., 1849, p. 93.

‡ Hist N. Am. Pinnipeds, 1880, p. 720, footnote.

§ Ibid., pp. 707-723.

The next contribution to the literature of the subject was an account by Mr. Henry W. Elliott, in June, 1884,[*] of the specimen then recently received at the U. S. National Museum from Professor Felipé Poey of Havana, as already noticed (see p. 1). He gives a figure from the mounted specimen, and briefly describes its external characters, adding a short summary of the history of the species.

In December, 1886, Messrs. F. W. True and F. A. Lucas published an important paper[†] on the cranial characters of the species, based on the skull of the specimen received at the U. S. National Museum from Professor Poey. The paper is illustrated with three plates of the skull (the figures drawn two-thirds natural size), and is a most valuable contribution to the subject. The species is for the first time shown to be unequivocally referable to the genus *Monachus*. The specimen, however, proves to have been immature, in fact scarcely more than half the adult size.

On the present material coming into my hands, early in January, 1887 (as already noted—see p. 2), I published a preliminary notice of it on January 14,[‡] followed by a second brief notice on January 21.[§] At the time of writing the first notice I had not seen the paper of Messrs. True and Lucas. A few weeks later Prof. H. A. Ward gave an account[‖] of the rediscovery of the species at The Triangles.

Finally, I may mention in this connection a paper entitled "Notes on the Life History of *Monachus tropicalis*," by Mr. Henry L. Ward, based on his experience with the species at The Triangles in December, 1886, prepared for publication in the "American Naturalist." It contains the fullest account of the life history of the species which I have yet seen, and the only information on this subject available, aside from the scanty notes of Hill and Gosse, published nearly sixty years ago.[¶]

---

[*] The monk-seal of the West Indies, *Monachns tropicalis* Gray. <Science, Vol. III, No. 72, pp. 752, 753, June 20, 1884.

[†] On the West Indian Seal, *Monachus tropicalis*, Gray. <Smiths. Report for 1884, pt. ii (Dec., 1886), pp. 331-335, pll. i-iii.

[‡] The West Indian Seal. <Science, Vol. IX, No. 206, p. 35, Jan. 14, 1887.

[§] Ibid., No. 206, p. 59, Jan. 21, 1887.

[‖] The West Indian Seal (*Monachus tropicalis.*) <Nature, Vol. XXXV, No. 17, Feb. 24, 1887, p. 392.

[¶] I am indebted to the kindness of Mr. Ward for a manuscript copy of his paper, received February 14, 1887, for use in the present connection, extracts from which are given in the following pages.

GEOGRAPHICAL DISTRIBUTION.—The West Indian Seal, two centuries ago and earlier, appears to have been an abundant species in many parts of the Gulf of Mexico and in portions of the Caribbean Sea. It extended eastward to the Bahamas, and was very numerous there as late as the beginning of the eighteenth century. Sir Hans Sloane, in his great work on the Natural History of Jamaica,* published in 1707, says (Vol. 1, Introduction, p. lxxxviii.): "The *Bahama* Islands are filled with Seals; sometimes Fishers will catch one hundred in a night. They try or melt them, and bring off their Oil for Lamps to the Islands." This not only attests their abundance there at this date, but the rapidity with which they were destroyed.

It ranged as far westward as the keys and islets lying north and west of Yucatan, where some still exist, Mr. Ward's specimens having been obtained at The Triangles, situated about one hundred and fifty miles west of Yucatan.

At the Alacran Islands, about seventy-five miles north of Yucatan, they existed, two hundred years ago, in great numbers. Dampier, writing of these islands in 1675, says: "Here are many Seals: they come up to sun themselves only on two or three of the Islands.... There we Anchored and lay three or four days, and visited most of them, and found plenty of such Creatures [Seals], as I have already described." He further states that there is here "such plenty of Fowls and Seals (especially of the latter), that the Spaniards do often come hither to make Oyl of their Fat; upon which account it has been visited by English-men from *Jamaica*, particularly by Capt. *Long:* who, having the Command of a small Bark, came hither purposely to make Seal-Oyl, and anchored on the North side of one of the sandy Islands, the most convenient Place, for his design." Captain Long was nearly shipwrecked "by a fierce North-wind, which blew his Bark ashore;" but he afterward repaired his vessel, filled all his casks with oil, "and lading his Oyl,.... went merrily away for *Trist*." † It was doubtless not long before the

---

* A Voyage to the Islands Madera, Barbados, Nieves, S. Christophers and Jamaica, with the Natural History of the Herbs and Trees, Four-footed Beasts, Fishes, Birds, Insects, Reptiles, &c, of the last of those Islands....[etc.] Two volumes, folio. Vol. I, 1707; Vol. II, 1725.

† Dampier, Voyage round the World, Vol. II, part ii, 3d ed., 1705, pp. 23, 24.

Seals became scarce, through man's cupidity, and the few that survive to the present day are merely the scattered remnants of once populous colonies.

On the coast of Honduras, in about latitude 16°—a few miles northeast of the Mosquito Coast—is a group of islets known as Seal Keys, and some two hundred miles further south, on the same coast, in about latitude 12° 40′, is another Seal Key, which facts may be doubtless safely taken as an indication that in early times the range of the West Indian Seal extended southward to the Bay of Honduras.

As shown by the account of this Seal already quoted from Mr. Gosse, a small colony existed as late as 1846 at a reef of rocks known as the Pedro Kays, lying off the south coast of Jamaica. Ten years ago Mr. R. W. Kemp wrote me* that two were seen about 1875 near Cape Florida, which were supposed to have strayed from some of the Bahama Islands. He also wrote me that he had been informed by trustworthy persons that Seals were to be found in great numbers at some islands situated between the Isle of Pines and Yucatan. His informant claimed to have landed there and killed some, "merely 'for fun'." Mr. Kemp alludes to their great rarity on the coast of Florida, where they occur "only once or twice in a lifetime," but affirms their existence in comparative abundance on the coast of Yucatan, and their occasional occurrence at the Bahamas. Their presence at Salt Key Bank, between Florida and the Bahamas, as late as 1868–69, is attested by information received some years since from the late Count L. F. de Pourtalès.† The capture of a specimen near Havana, Cuba, in 1883, seems to indicate that some still exist in the vicinity of Salt Key Bank. In the southern part of Caicos Bank, the charts give a group of islets under the name Seal Keys, in latitude 21° 15′, a little southwest of Turk's Island.

As I stated in 1880, on the authority of Mr. S. Garman, they are well known to the wreckers and turtle-hunters of the West Indian waters, and I have since conversed with whalers who had also met with them while cruising for Whales in the Gulf of Mexico.

---

* See N. Am. Pinnipeds, p. 721.

† Ibid, p. 722.

Their recent discovery by Mr. Ward at The Triangles confirms a portion of Mr. Kemp's statement, cited above, and renders it quite probable that other small colonies exist at some of the many islands off the Yucatan coast.* I have met, however, with no reference to their occurrence in or near the Lesser Antilles, nor anywhere to the eastward of Jamaica.

The habitat of the West Indian Seal may therefore be briefly stated as extending, formerly at least, from the islands off the west and north coasts of Yucatan, south to the Bay of Honduras, and eastward to Jamaica, Cuba, the Florida Keys, and the Bahamas.

It is certain that the species still exists among the islets of Salt Key Bank, north of Cuba, and at some of the islands off the coast of Yucatan, and probably at other islands between Cuba and Yucatan.

HABITS.—Very little can be gleaned respecting the habits of this species. Mr. Hill, as quoted by Gosse (l. c.), thus describes the behavior in confinement of the young one on which his original account of the species was based : "When the specimen from which these notes were made first arrived it was very lively, and so sensible to the slightest touch, that however lightly the hand might be placed on the fur, it felt the contact, and moved rapidly away, jerking the whole body forward. When left unmolested it was playful. It ploughed the water with the nose, and snorted as it drew the head out. It grunted like a pig, and barked, growled, and snarled, like a dog. It was fond of turning upon the back and lying dozing. In this posture it slept and basked in the sun. It refused all food, and lived four months without eating. Symptoms of dullness only appeared in the last month, when it was found to be laboring under some disease of the head ; and when it died it was discovered to have become totally blind, the dark pupil of the eye having disappeared, together with the crimson color of the iris.† It was surprisingly fat, notwithstanding its long fast. The fat was four inches thick, and yielded four gallons of oil. It was a male, but the organs of generation were not externally perceptible."*

---

* Mr. Ward mentions the capture of a young one alive, November 29, 1886, near the city of Campeche, during his stay there, but he believes it is quite uncommon along the coast at that point, as it was regarded by the people as a great curiosity, and was afterward taken by its owners to Progresso for public exhibition.

† The crimson color of the iris ("irides crimson") noted in Mr. Hill's description was doubtless due to inflamation, as Mr. Ward informs me that in the living examples he met with at The Triangles the irides were dark reddish-brown, and the expression of the eye dull and lusterless.

Mr. George Wilkie, according to Mr. Gosse, visited the Pedro Kays in the spring of 1846, and succeeded in obtaining a larger specimen. The notes made by Mr. Wilkie respecting these Seals in their native element were communicated through Mr. Hill to Mr. Gosse, who published them in his work on Jamaica. From these notes I extract the following: "When Mr. Wilkie's party first landed.... they surprised five Seals on shore. They immediately succeeded in heading a 'Bull,' or Male Seal, both big and burly, and killed him. He proved to be an aged patriarch, with teeth worn nearly to the stumps, and a hide gashed and seamed with scars, got in many a fierce fight.... In the scramble which the Seal makes to regain the water, nothing is to be remarked but the violence and impatience with which he jerks his body forward; but when he plunges from the shore into the sea, it is no small treat to see the suddenness with which the uncouth animal, so unwieldly and helpless on land, becomes gracefully alert in the ocean. The command with which he strikes through the water, the velocity with which he cleaves the flood, the ease with which he winds the mazes of the rocks, and dashes forward into the hidden recesses of the deep, are beautifully interesting in a creature looking so essentially a quadruped. When the boat is afloat again, the Seals come trooping out to reconnoitre. At a depth of about three feet they paddle about, gazing up through the clear liquid with an expression of countenance beaming with curiosity and intelligence. They dodge around the boat, occasionally ascending to the surface, to renew their inspirations of air, and to look upon their island home, to ascertain whether they may return thither and be at rest.

"A grown-up cub about four feet long had been taken by the people. One Seal was observed more persevering in her watchfulness and assiduity to regain the shore, than the rest. This was conjectured to be the dam of the slaughtered young one. The maternal instinct did not exhibit any stronger emotion than this anxious vigilance. The young one was sufficiently grown to be no longer dependent on the mother. Had it been still sucking, there was enough to show that parental passion would have merged fearlessness into fury, and inquietude for the safety of its young, into unsparing vengeance for its fate.....

---

* Gosse's Nat. Soj. in Jamaica, p. 108.

"I must not omit to mention that our friends had one opportunity of closely observing the progression of the Seal when ascending the beach. The advance was by zigzag movements. It was evident that the ground was first gripped by one fore flipper, then by the other, that the body advanced first to the right, then to the left, as one or the other flipper took its hold of the earth, and helped the body onward. They seemed to delight in basking in the sun, and to huddle together, and grunt out their pleasure in each others company."

The stomachs of those examined proved empty, but "the opinion that the more experienced fishermen expressed was, that they fed as generally on molluscous animals as on fish, and that their teeth suffered much wear and tear in the work of breaking shells."*

Mr. Ward's account of the habits of this species differs materially from the observations above cited. He says "The whole character of this Seal is that of tropical inactivity," and that "several of those collected had such a growth of minute fungi on their back and flippers, more especially the hinder ones, as to appear quite green."

"Upon first approaching them" says Mr. Ward,† "they appeared to have no dread whatever of the human presence, lazily looking at us, perhaps uneasily shifting their position, and then dozing off in restless sleep. Upon advancing to within three or four feet they would somewhat rouse themselves, bark in a hoarse, gurgling, death-rattle tone, and uneasily hitch themselves along a few paces. At first the Seals offered very little resistance, and only upon the second day of our stay, when they had become somewhat accustomed to our presence, and when we made an onslaught upon a group of several, did they show fight at all. On this occasion their numbers and their being huddled together seemed to give them courage, as well as making our attempts to kill them with clubs and daggers (we had early decided not to use firearms, because of the danger of frightening them away from such small islands) dangerous and more or less abortive. Not infrequently would they make savage rushes for a yard or two at some one of our attacking party and, failing to reap revenge upon us, would fall upon their dead or dying fellows, biting and shaking them in impotent rage; or occasionally two would engage each other in savage conflict for a moment or two, the heavy gnashing of their teeth as their powerful jaws closed giving us a lively idea of how unpleasant it would be to fall within their reach. Nevertheless, the whole aspect of the animals was one of indecision. Instead of stampeding when molested, they only roused themselves to action upon being individually attacked. As another illustration of their lack of intellectual acuteness, I may mention that on the following morning we found several Seals that had 'hauled up' during the night among the dead ones surrounded by skinned carcasses.

---

* Gosse's Nat. Soj. in Jamaica, pp. 112-114.

† Manuscript paper, previously cited.

"In the water they showed no particular curiosity in regard to a boat or its occupants, a curiosity usually so very marked among Seals, nor did they disport themselves in play as does the Harbor Seal. That they are generally peaceful is borne out by their appearance, very few scars of combat being observed, and some of them were not unlikely inflicted by the myriads of sharks surrounding the islands. The contents of the stomachs of several were examined, but nothing except fluids was found, which gave no clue to their food. It undoubtedly consists largely of fish; one in captivity was fed on this food and appeared to thrive well. They are greatly infested with intestinal parasites several inches in length which, shortly after death, swarm out of anus and vagina, dying as they reach the air.

"On land or in shallow water the Seal progresses by drawing forward the hind parts, thus throwing the line of the back into a strong curve, then pitching itself forward on to its breast to again repeat the same action. The distance covered is usually about a foot, the difference between the chord of the arc and the horizontal length between the fore and hind flippers; but when this movement is violent the Seal throws itself forward with so much force as to somewhat overshoot this. The appearance of one moving is much like that of an 'inch-worm';—a continual bobbing up and down of the middle of the back. One was noticed, which, when under considerable excitement, evidently forgot how to run ; but lay on its belly trying to scull through the sand with its hind flippers as though it were in the water."

Mr. Ward reached The Triangles on December 1, 1886, and, as already stated, left on December 4.* "This," says Mr. Ward, "proved to be the time of parturition among the Seals, for upon making a landing on the East Island we killed a female with a fœtus nearly ready for birth, and in a little interior pond of salt water found a female lying on her side suckling her young. She paid no more attention to our approach than would the familiar denizens of the barn yard under similar circumstances. Subsequently four other females were killed containing nearly ripe fœtuses. In one case, when the fœtus was removed immediately after killing the mother, it kicked and squirmed for one or two minutes in such a lively manner as to indicate that delivery would have occurred in a few moments had the female not been molested. Following the usual order with Seals, there is but one offspring at a birth. The female can have little difficulty in nursing it, as in any but a perfectly prone position one or more of her four teats will always be within reach of the young.

"The fœtus is quite large, one measuring 85 cm. in length from the tip of nose to end of tail. The hair is long, very soft and woolly, and of a glossy black color. Parturition probably occurs in shallow water, as the three females noticed nearest this period were lying stranded on the beach, half in and half out of water. The young Seal previously mentioned was of a uniform black color, including its mystacial bristles, with large, dark-brown, lustrous eyes that looked inquiringly at me ; more intelligent in appearance than were the adults. This youngster we took with us on leaving the islands and had it in captivity for a week or more at Campeche, where it eventually died, probably from lack of proper nourishment. Its teeth were uncut, and so it had no thoughts of offering resistance when handled. It was totally devoid of fear ; but most too young to make any demonstrations of friendship.

---

* For a detailed description of these remote sandy islets, see Mr. Ward's paper in the "American Naturalist," above cited.

Its time on shipboard was spent in aimlessly roaming to and fro, serenely regardless of such trivial obstructions as people standing in its way, uttering every few moments its cry—a long drawn out, gutteral *ah*, with a series of vocal hitches during its enunciation. At Campeche this little Seal seemed to enjoy its daily bath in the sea, plunging its head under water and blowing and snorting as if in great glee, yet ever and anon uttering its plaintive cry, as if in momentary mourning for its lost parent."

As shown by Mr. Ward's observations, the West Indian Seal brings forth its young about December 1. In this respect it differs in habits from nearly all the species of Seals inhabiting the Northern Hemisphere, the Gray Seal (*Halichœrus grypus*) being the only other species known to bring forth young in autumn.

Mr. Wilkie's meeting with a young one, already weaned, in the spring (as noted above), further indicates that parturition occurs late in the autumn or early in winter.

DESCRIPTION OF PLATES I–IV.

Monachus tropicalis.

Plate I.—Adult male, adult female, and young a few days old. From photographs of mounted specimens.

Plate II.—Skull of adult male, ⅓ natural size.

Plate III.—*Figg.* 1–3. Skull of a very young example, slightly under ½ natural size.

Fig. 4. Scapula of adult female, ⅓ natural size.

Fig. 5. Superior border of scapula of adult male, ⅓ natural size.

Figg 6–8. Humerus of adult male, a little less than ⅓ natural size.

Figg. 9–11. Humerus of *Phoca vitulina*, for comparison with that of *M. tropicalis*, same scale.

Plate IV.—*Fig.* 1. Dention of young male (teeth unworn), ½ natural size.

Figg. 2 and 3. Femur of adult male, ⅓ natural size.

Figg. 3 and 4. Pelvis of adult male, 2-5 natural size.

Fig. 5. Innominate bone of adult female, 2-5 natural size.

Figg. 6 and 7. Atlas of adult male, ⅓ natural size.

Fig. 8. Os penis, ⅓ natural size.

ARTICLE II.—*Note on Squalodont Remains from Charleston, S. C.*

By J. A. ALLEN.

Squalodon tiedemani, sp. nov.

PLATES V AND VI.

In a collection of fossils from Charleston, S. C., kindly presented to the American Museum of Natural History by Mr. I. B. Tiedeman, is an interesting fragment of the skull of a Squalodon, consisting of the anterior portion of the upper jaw, 50 cm. in length, with the teeth and bones still *in situ* (see Pl. V, and Pl. VI, fig. 1). The teeth are all more or less broken at the point; the third premolar on the left side is lacking; the fourth on the same side is broken off just below the alveolar border; the fifth has lost its apical half, and the greater part of its single-rooted fang is exposed by the absence of the outer wall of the alveolus. Both intermaxillaries also lack the posterior third of their length, and two or three inches of their anterior extremities are broken away, leaving the fangs of some of the incisors exposed. This fragment represents a large part of the anterior rostral portion of the cranium.

The specimen was obtained, according to Mr. Tiedeman, in dredging phosphatic material from the Wando River at Charleston, this material occurring in detached fragments in the mud of the river bottom; it is thus presumably an erratic from the Phosphate beds of the neighboring region. The dimensions of the specimen are as follows:

Total length	500 mm.
Length of alveolar border of right maxillary (including six teeth)	300 "
Length of alveolar border of left maxillary (including five teeth)	225 "
Breadth of the palatal surface at the 5th premolars	65 "
Distance between external alveolar borders of the maxillaries at the 5th premolar	130 "
Breadth of the palatal surface at the 2d premolars	58 "
Distance between the external alveolar borders of the maxillaries at 2d premolars	95 "
Distance between canines at base	50 "
Distance between outer borders of canines near the apical extremity	110 "
Distance between the outer incisors at alveolus	30 "

Distance between outer edges of outer incisors at alveolus....	65 mm.
Transverse diameter of the right outer incisor at alveolus....	23 "
Antero-posterior diameter of the right outer incisor at alveolus.	24 "
Transverse diameter of right canine at alveolus.............	23 "
Antero-posterior diameter of right canine at alveolus........	24 "
Transverse diameter of 1st premolar......................	22 "
Antero-posterior " 1st "	24 "
Transverse " 2d "	22 "
Antero-posterior " 2d "	24 "
Transverse " 3d "	22 "
Antero-posterior " 3d "	25 "
Transverse " 4th "	23 "
Antero-posterior " 4th "	28 "
Transverse " 5th "	25 "
Antero-posterior " 5th "	32 "

The teeth are all, as already stated, more or less broken at the point, and portions of the outer layer have fallen away in several of them, particularly toward the point. It is consequently not possible to give the full length of the teeth above the alveolus, nor the length of their fangs, in consequence of the teeth being still firmly implanted in the jaw.

The teeth number seven in a linear series along each margin of the jaw, with a portion of the eighth on the right side. A portion of the fang of an inner incisor, directed nearly horizontally forward, is seen on the right side ; on the left the corresponding tooth is wholly broken away. The outer incisors are but little smaller than the canines and the anterior premolars. The teeth are all cylindrical in form, the crowns tapering and conical, directed slightly forward and outward, and a little recurved—the outer incisors, canines, and first two premolars distinctly so. The fifth premolar is decidedly flattened, the tooth behind it still more so, judging from what remains of its alveolus, but whether two-rooted is not distinctly shown. The two diameters of the first four premolars are nearly equal. The canines are slightly flattened laterally.

The intermaxillaries are widest in front, and taper gradually and nearly uniformly backward to a point opposite the fifth tooth. From this point posteriorly they are broken away, but the space they formerly occupied shows that they gradually widened again, till at a point about opposite the first molar their width was the same as at their anterior border.

The palatal surface is nearly flat, and widens very slightly posteriorly ; there is a deep narrow mesial furrow, marking the junction of the palatal borders of the intermaxillaries. The suture between these bones and the maxillaries is also marked by a slight groove. Both the width and thickness of the rostrum are nearly uniform from the incisive border to the first two-rooted molars, with evidence of slight expansion from about this point (the proximal end of the fragment in question) posteriorly. The edge of the maxilla is deeply hollowed at the intervals between the teeth, for the reception of the points of the corresponding teeth of the lower jaw.

There are also in the American Museum of Natural History two mandibular fragments which I also refer to the present species. They are from the Holmes Collection, and are labeled as coming from the Ashley River, South Carolina. One (see Pl. VI, figg. 2–4) is a fragment, without teeth, of a left ramus—a section 160 mm. in length from near the anterior extremity. It contains four complete alveoli, in front of which is seen the posterior wall of another, and behind them part of the alveolus of a sixth tooth. The last complete alveolus is considerably flattened laterally, and indicates that its tooth was double-fanged. The one preceding this is also somewhat flattened, and there are indications that it was occupied by an imperfectly double-rooted tooth. The other alveoli are circular in outline and their teeth were evidently single-rooted. The first alveolus has a breadth of 27 mm., a length of 36 mm., and a depth of 53 mm. The corresponding dimensions of the second are respectively 28 mm., 35 mm., and 56 mm. The third has the same width and length, but is filled at the bottom with matrix. The fourth has a width of 26 mm., and a length of 38 mm. ; it is broken away at the bottom. The first two alveoli have the form of hollow cones, sloping and somewhat curved backward.

This fragment thus terminates posteriorly at the front edge of the alveolus of the second double-rooted tooth, and ends anteriorly at the middle of the alveolus of probably the second (perhaps the third) ‘premolar.’

The inner face of the ramus is nearly flat and almost straight; the outer surface is slightly rounded or convex; the lower border is rather thin and angular at the anterior end of the fragment, becoming gradually thicker and more rounded toward the posterior end. The thickness of the jaw at the anterior end, just below the alveolar border of the third premolar, is 35 mm.; at the posterior end, at the alveolus of the second double-rooted molar, the thickness is about 53 mm. The depth of the jaw at the same points is respectively 64 mm. and 75 mm.; the ramus considerably increasing in size posteriorly. The alveoli lie nearest the outer edge of the jaw anteriorly, but nearest the inner margin posteriorly, the axis of the tooth-line being somewhat oblique to that of the ramus. On the outer margin of the jaw, between the alveoli, is a concavity for the reception of the alternating teeth of the maxilla. On the outer surface are three tubular grooves, directed backward, one opposite each of the last three alveoli.

The other fragment is a portion of a right ramus, less perfectly preserved, and representing a more posterior part of the mandible. It is 335 mm. in length, and contains two complete alveoli, and portions of two others posterior to these. The outer face of the fragment is nearly twice as long as the inner; the alveolar border is left intact for only about 130 mm. The lower border is also much broken away—nearly to the base of the alveoli. The two complete alveoli, situated near the anterior end, seem to correspond with the fourth and fifth of the other fragment. The second alveolus, like the one preceding it, was occupied by a single-rooted tooth. The tooth next succeeding was probably double-fanged; the imperfect condition of the alveolus renders this point not positively determinable. The outer edge of the mandible thickens rapidly behind the second alveolus, but the alveolar border continues nearly straight, slightly rising apparently at the extreme proximal end of the fragment.

In size these two specimens correspond very nearly with the above described rostral fragment.

The larger Squalodont remains hitherto described from the vicinity of Charleston, S. C., have been referred to *Squalodon holmesi* Leidy. Those here described, however, indicate a species of much larger size, and on this account perhaps might be provisionally referred to *Squalodon atlanticus* Leidy, based on remains from the Miocene of Maryland and New Jersey. As, however, all we know of either of these species rests on a few detached teeth, which do not agree satisfactorily with those of the specimens here described and figured, it seems better to indicate by a new name the species represented by these characteristic fragments, and await the acquisition of additional material for the determination of its relationship to the larger Squalodonts of the Atlantic coast. I therefore take pleasure in naming the present species *Squalodon tiedemani*, in honor of its discoverer, Mr. I. B. Tiedeman, of Charleston, S. C., to whom the Museum is indebted for a valuable collection of fossils, including the specimen here described.

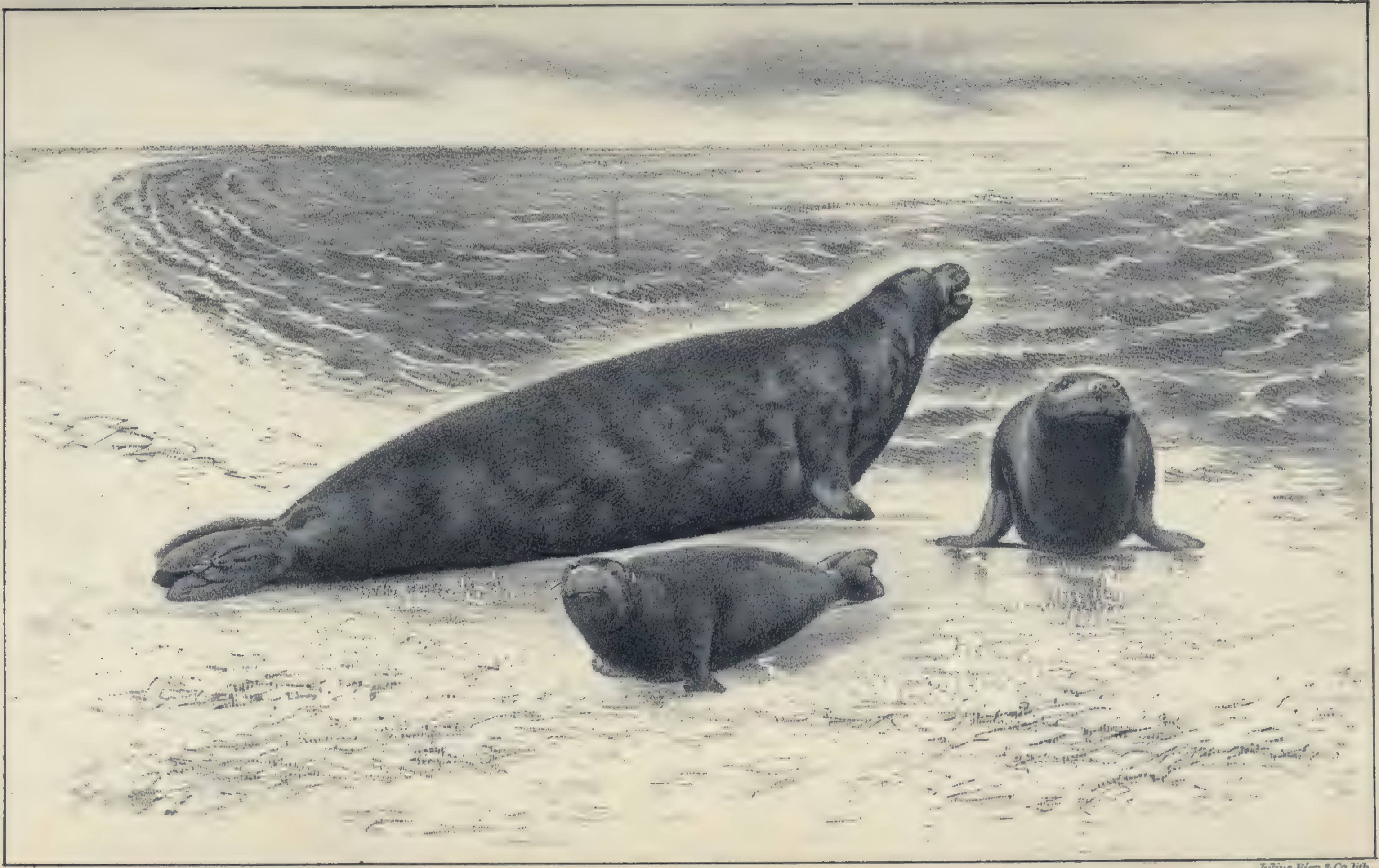
Squalodon tiedemani is apparently rather nearly related to *S. antverpiensis*, but considerably exceeds it in size.

DESCRIPTION OF PLATES V AND VI.

Squalodon tiedemani.

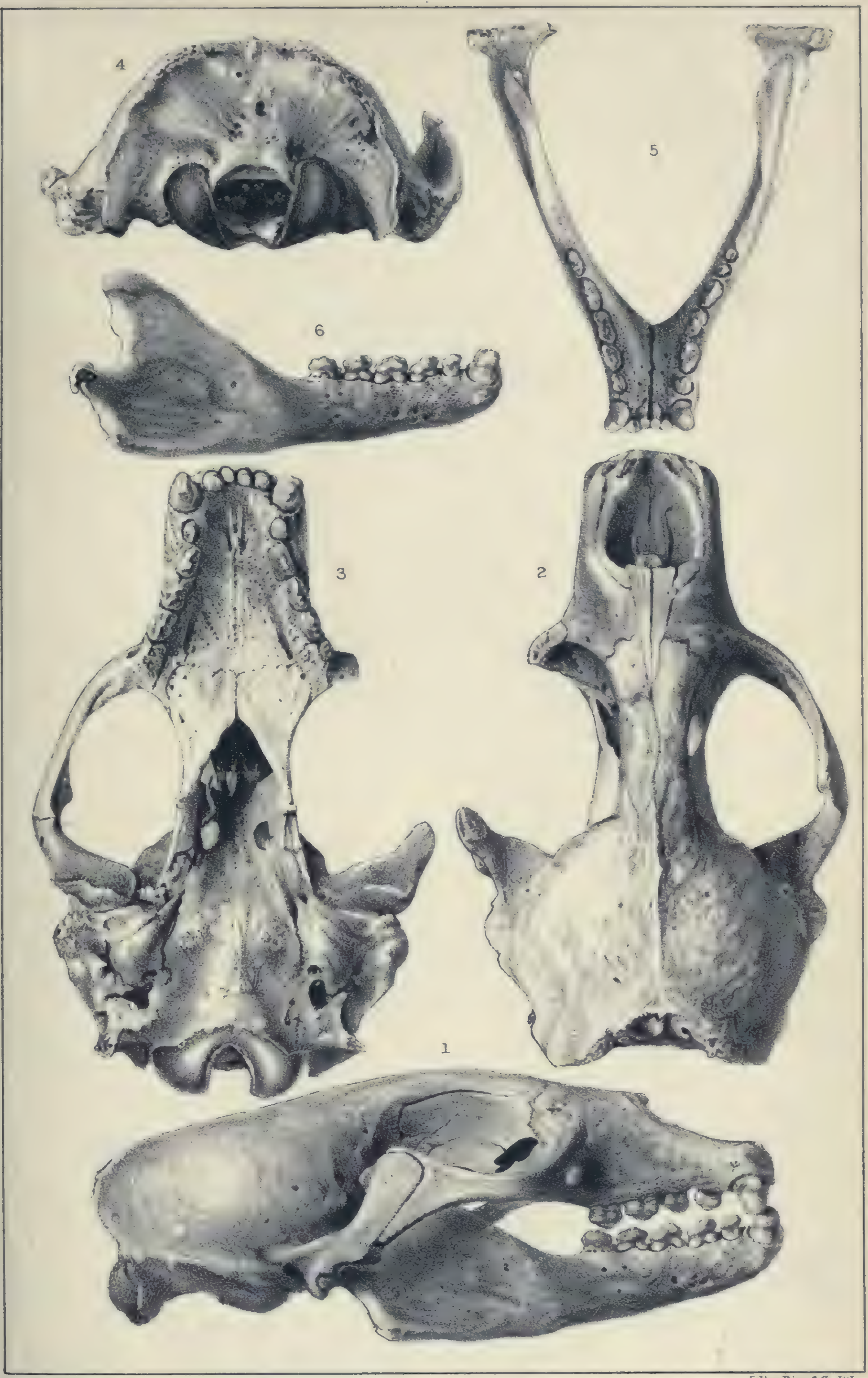
Plate I.—Rostral portion of skull, ⅓ natural size.

Plate II.—*Fig.* 1. Rostral portion of skull, ⅓ natural size.
Figg. 2–4. Part of mandibular ramus, ⅓ natural size.


Male
Young
Female

Julius Bien & Co. lith.

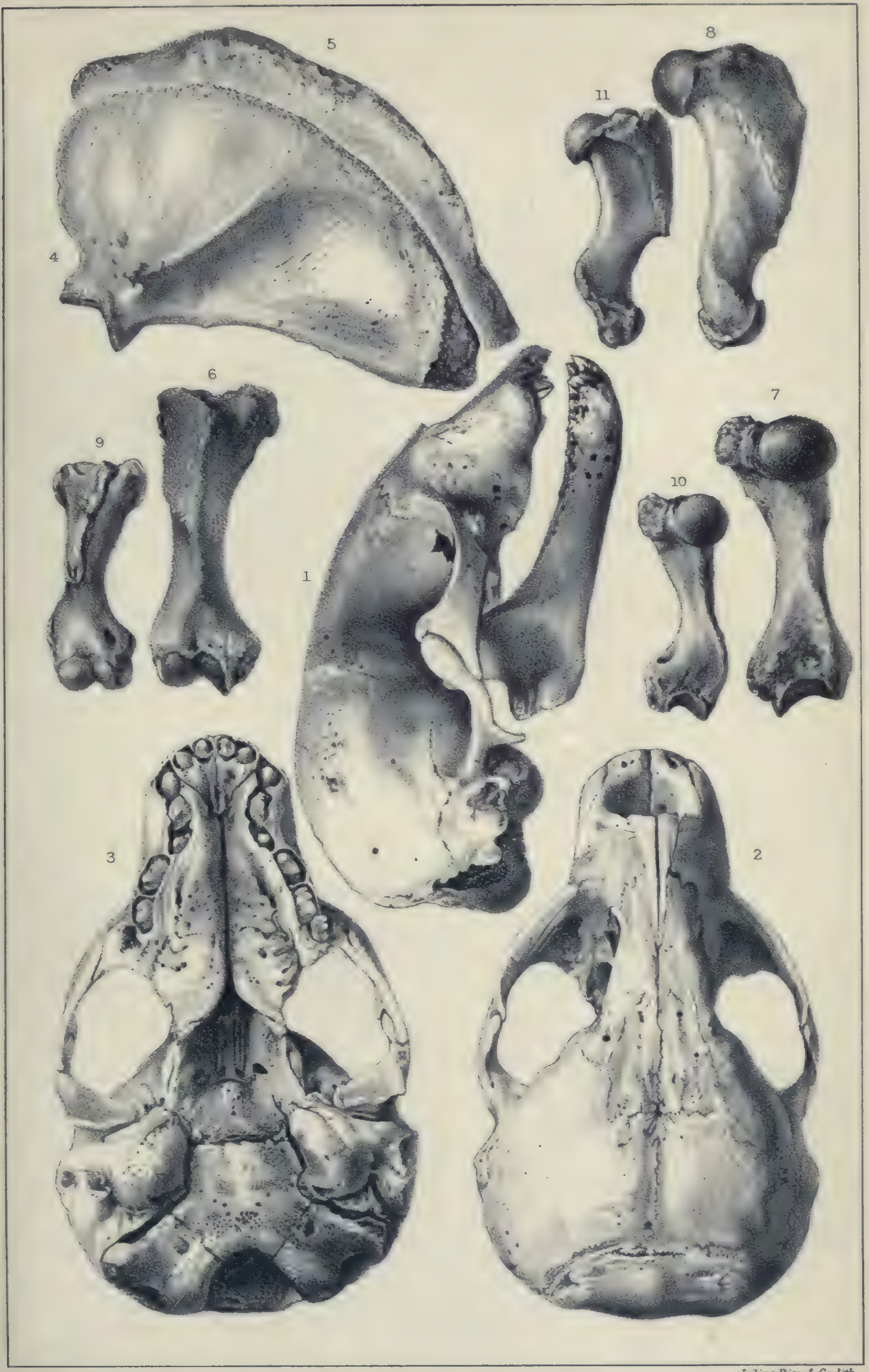
MONACHUS TROPICALIS.



Julius Bien & Co lith

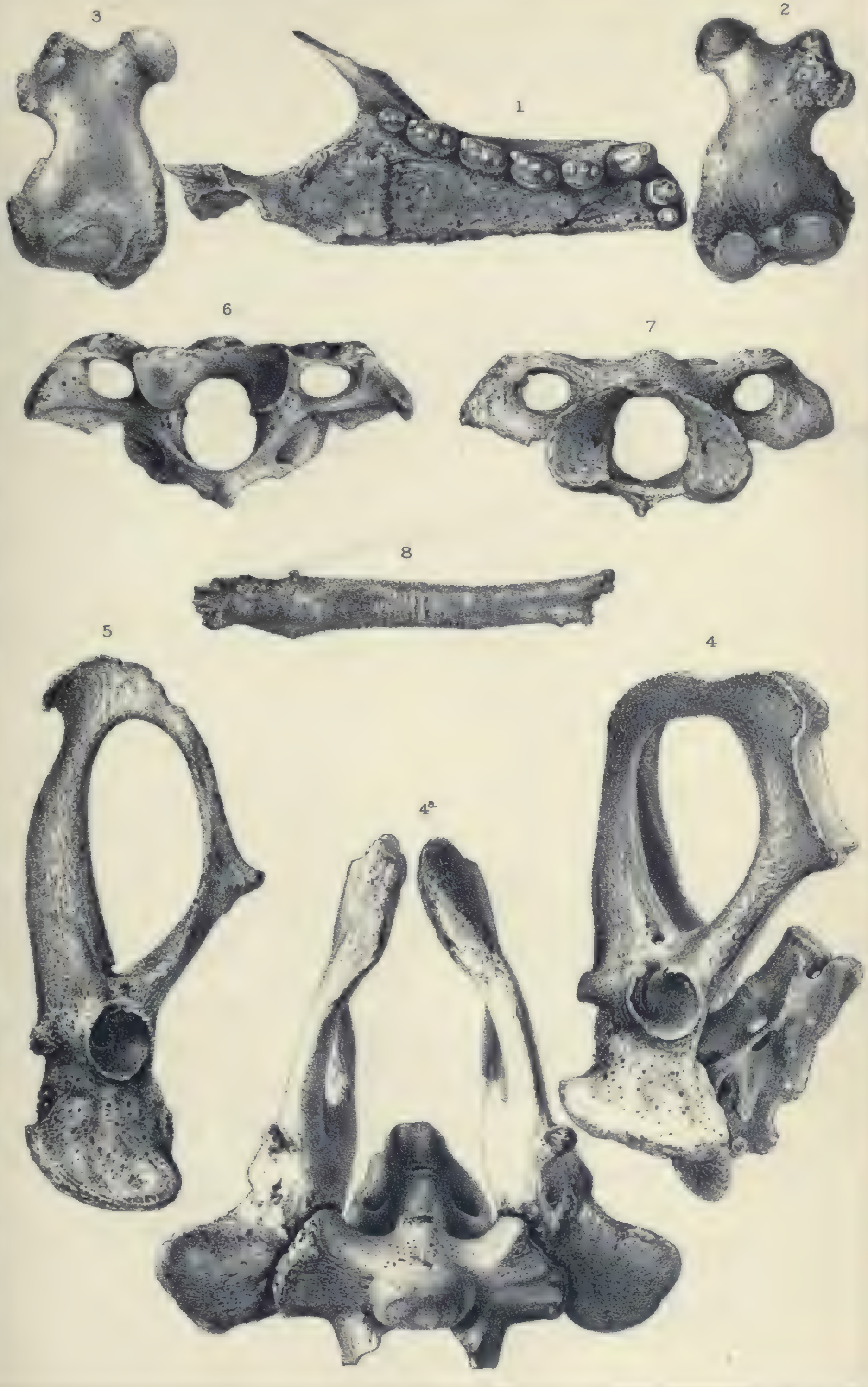
MONACHUS TROPICALIS.

⅓ Natural Size.


5
8
11
4
6
7
9
10
1
3
2

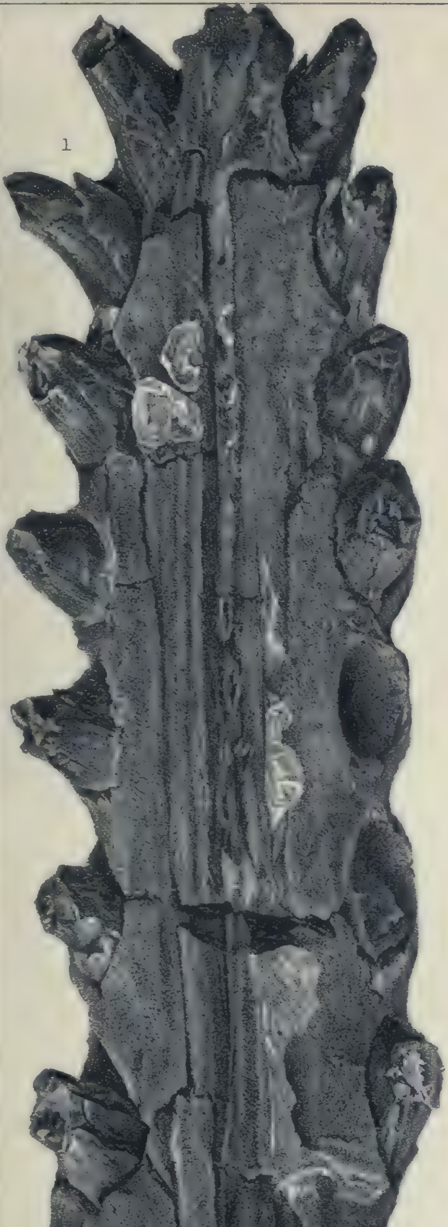
Julius Bien & Co. lith.

MONACHUS TROPICALIS

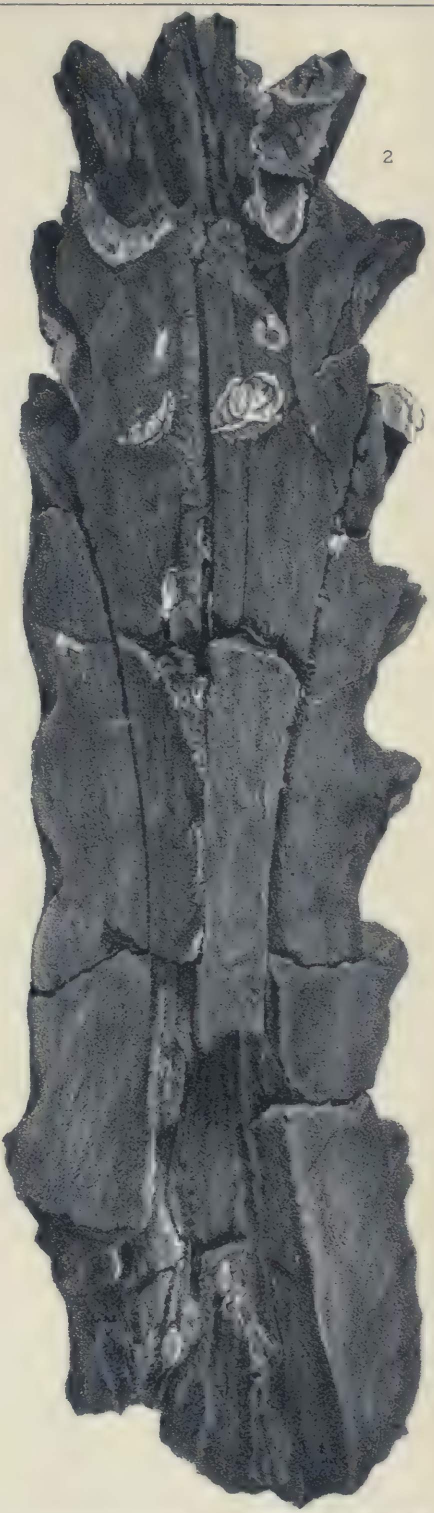

3
1
2
6
7
8
5
4
4a

Julius Bien & Co. lith.

MONACHUS TROPICALIS.



1

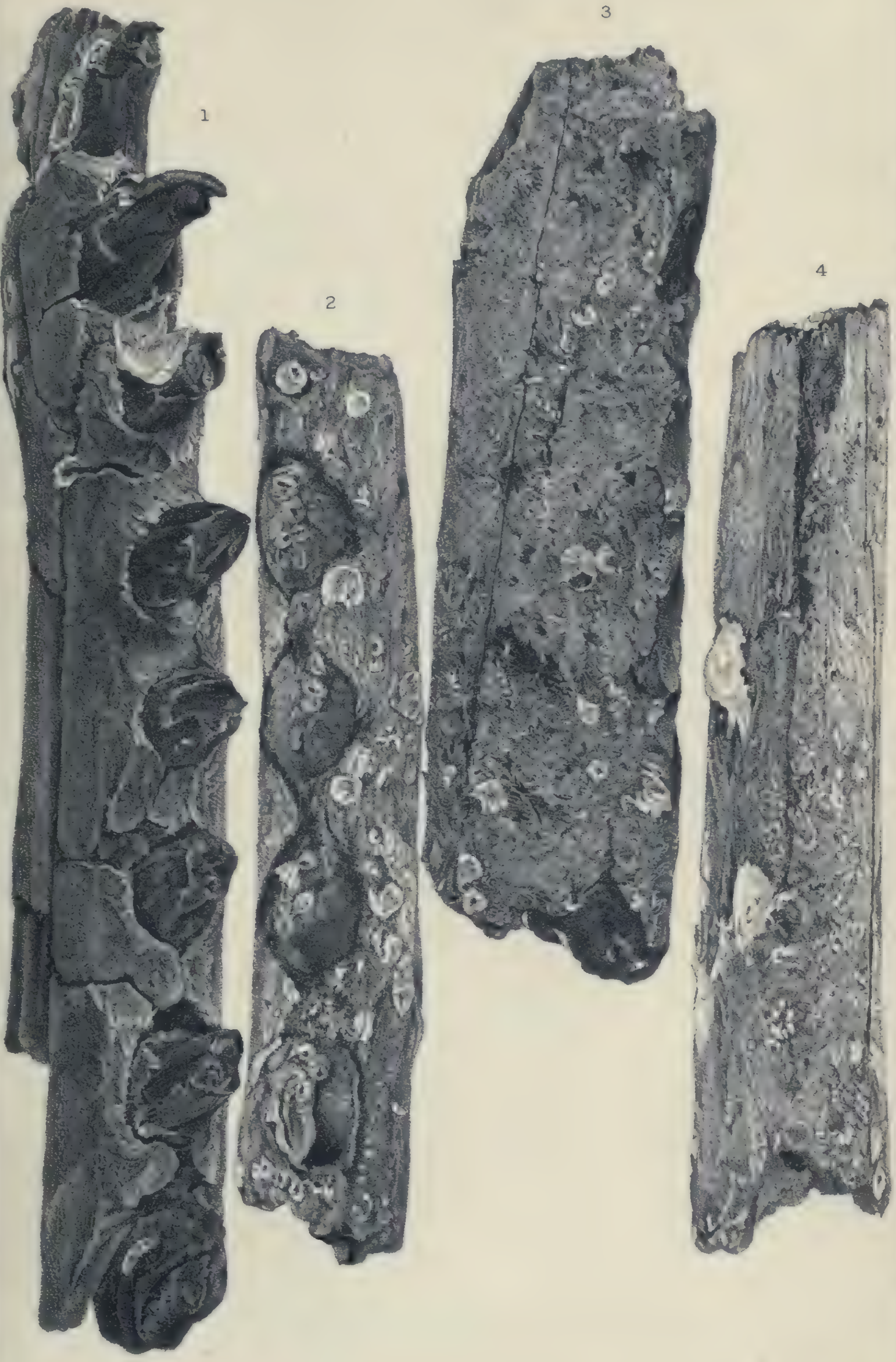


2

Julius Bien & Co. lith.

SQUALODON TIEDEMANI.

⅓ Natural Size.



Julius Bien & Co lith

SQUALODON TIEDEMANI.
⅓ Natural Size

ARTICLE III.—*Observations on some imperfectly known fossils from the Calciferous sandrock of Lake Champlain, and descriptions of several new forms.* By R. P. WHITFIELD.

Up to the time of the publication of Vol. I. of the Palæontology of New York, little appears to have been known of the organic remains of the Calciferous formations of New York, either on Lake Champlain or in the Mohawk Valley. Dr. Vanuxem notices a few species from the Mohawk Valley in his Report on the Third District, two species of *Ophileta* being the most prominent ; and Dr. Emmons gives others from Lake Champlain, but most of those referred to the Calciferous by this author in his Report on the Second District, have been referred to the Chazy limestone by later writers. In Vol. I., Pal. New York, the species then known to pertain to the Calciferous are brought together, and comprise three species of Plant remains from the Fucoid beds, one Brachiopod (*Lingula acuminata*, Conrad), eight Gasteropods and two Cephalopods. Among the Gasteropods, *Euomphalus uniangulatus* and *Ophileta complanata*, are generally considered as the most typical of the formation, and are felt to be the safest guides in determining the geological horizon of any beds with which they may be associated. In later years Mr. Billings, of the Canadian Geological Survey, added many species to the fauna of this group from the Canadian provinces. Up to the present time, however, little has been added to our knowledge of this group from any of the New York localities. Early in the spring of 1888, Prof. Henry M. Seely, of Middlebury College, Middlebury, Vt., sent to the Museum a box of fossils, among which *Ophileta complanata* was the most abundant, while *Maclurea sordida*, Hall, was quite common. Associated with these were a number of Gasteropods, several Cephalopods and two Brachiopods, most of which proved to be unknown species. Most of these are described in the following pages, and some of those previously described and figured from imperfect material have been illustrated from better specimens and redescribed.

During August of 1888 I visited the locality from which Prof. Seely obtained his specimens, in company with him and Mr.

Kirby, who owns and occupies the adjoining farm, together with the Rev. J. R. McLeod, of Kingsbury, Quebec, and obtained additional material. The locality is about one and a half miles north of Beekmantown Station, on the Delaware and Hudson Railroad, three miles north of Plattsburgh, N. Y.

The outcrop forms a low bank, exposing about seventeen or eighteen feet of rock at one point, and gives the following section, of which the thicknesses are estimated :

The lowest is a heavy bedded unfossiliferous limestone	3 feet.
Crystalline limestone, bluish gray, with Gasteropods and Cephalopods	6 inches.
Compact limestone with *Bathyurus*	15 inches.
Thin sandy limestones with *Ophileta* at base, but barren above	5 to 6 feet.
Thin sandy layers with *Ophileta* abundant	2 feet.
Silicious limestones destitute of fossils	2 feet.
Thin sandy layers with Fucoids	3 feet.

Above the Fucoid beds there are other layers with abundance of *Ophileta*, many of the layers being composed chiefly of that fossil. These layers continue back into the field to a low ridge, adding, perhaps, twenty or more feet of thickness, and all bearing this same fossil, to a greater or less extent, but generally quite abundant. Within the grove just north of the outcrop, and into which the ridge of the outcrop extends, we found some rough, sandy limestones which had been quarried for the purpose of flagging, and upon one of these an imprint of *Maclurea matutina*, Hall, which measures two and three-fourth inches in its greatest diameter.

Beyond the species described in this paper, there are in the collection several species represented by specimens too imperfect for description and illustration ; among which is an *Athyris*-like Brachiopod, represented by only a single valve, a *Bellerophon*-like form with only a single volution (possibly a *Platyceras*), several specimens of *Raphistoma Laurentina*, Billings ; a new species of *Triblidium*, a Cyrtolites ? presenting the aspect of a broad-backed *Porcellia*, two or more additional species of Cephalopods, and two species of *Bathyurus*-like Trilobites, as well as several forms too imperfect for determination.

[*March*,

The evidence furnished by the collection would indicate that of the forms previously known, as *Ophileta complanata* and *O. levata*, are only phases of the one species, the latter being only the inner coils or the partially grown forms of *O. complanata*. Also, that *Turbo? obscura*, Hall, Pal. N. Y., Vol. 1, Pl. 3, fig. 8, may be the same as *Pleurotomaria? turgida*, Hall, of the same plate, *Holopea turgida* of this paper. *Turbo dilucula*, Hall, loc. cite., Pl. 3, fig. 7, is a distinct species and is probably also a *Holopea*.

DESCRIPTION OF SPECIES.

Genus ORTHIS, *Dalman.*

Orthis Macleodi, n. sp.

PLATE 7, FIGS. 1–4.

Shell small, lenticular, subcircular in outline ; hinge line nearly two-thirds as long as the entire width of the shell; cardinal angles rounded, base more broadly rounded. Ventral valve most highly convex, beak projecting beyond the line of the hinge. Dorsal valve less highly convex than the ventral and with a slight mesial depression along the middle of the valve in some cases. Surface marked by strong radiating striæ, which are distinctly alternating in size and somewhat distant, on well preserved surfaces, the increase by implantation generally.

This species somewhat resembles *O. Evadne*, Billings, Pal. Foss. Vol. 1, p. 79, fig. 74, but has a shorter hinge line which gives a more circular outline, and the striæ are more numerous and not so strong or ridge-like as given in his figures.

Formation and locality.—In the upper layers of the *Ophileta* bed, at Beekmantown, N. Y.

Genus TRIPLESIA, *Hall.*

Triplesia radiata, n. sp.

PLATE 7, FIGS. 5–8.

Shell small, the largest valve observed scarcely exceeding one-fourth of an inch in width, which slightly exceeds the length from the beak to the front of the valves, measured on the ventral side. Valves quite ventricose, rounded on the sides and deeply emarginate in the center of the front border by the mesial fold and sulcus. Ventral valve with a deep, broad, triangular sinus extending from near the beak to the base ; beak prominent, hinge line about two-thirds as long as the width of the shell below ; area rather large, more than half as high as long, rounded at the margins and divided in the middle by a comparatively wide, triangular opening. Dorsal valve very convex, with a moderately elevated mesial fold, scarcely emarginate anterior margin, and very full, rounded beak. Surface of the shell marked by comparatively strong, rounded, radiating lines or striæ, which are increased by frequent bifurcation.

The shell presents much the appearance of a high-beaked, ventricose and deeply sulcated *Orthis ;* but it is evidently a true *Triplesia.* The valves have not been found in contact, consequently the features of the hinge are difficult to ascertain, but in a single small individual the area and its deltidial opening has been distinctly observed, and in sections where broken across in several places. Most of the specimens observed in the rock are under an eighth of an inch in length, and the apex of the ventral valve is usually quite erect in these examples ; only taking on the more incurved character at a later stage. The surfaces are also often quite smooth, from maceration, presenting in the matrix the appearance of having been dissolved by the action of water before being imbedded, thus obscuring the striæ.

I know of no *Triplesia* in this horizon or elsewhere that will need comparison with this for the purpose of distinguishing them, as the striation of this shell is its main specific feature.

Formation and locality.—In the hard, compact subcrystalline limestone of the Calciferous, at Beekmantown, New York, at from eight to ten feet below the principal *Ophileta* bed. From collections sent by Prof. H. M. Seely.

Genus METOPTOMA, *Philips.*

Metoptoma alta, n. sp.

PLATE 7, FIGS. 12 AND 13.

Shell of rather less than medium size, abruptly conical in form and laterally compressed, the section at the margin of the aperture being elongate ovate, widest anterior to the middle of the ovate figure. Apical angle on the type specimen about fifty-eight or sixty degrees, measuring the anterior and posterior lines, and that of the sides rather less than forty degrees. Anterior face of the shell slighty concave, and the posterior side very slightly convex. Lateral diameter of the shell a little more than two-thirds of the anterio-posterior diameter. Surface of the shell apparently smooth.

This shell is most nearly allied in form to *M. Venellia*, Billings, Pal. Foss., Vol. 1, p. 88, fig. 80; but differs in want of the vertical sulcations. From *M. Melissa*, of the same author, p. 86, it differs in being more conical and in not being "obliquely conical," and in the base being ovate instead of "uniformly broad oval." In the specimen the shell has been very thin, and its substance is coarsely crystalline so as to show only a granulated structure. I cannot see the muscular imprints distinctly, but suspect they are like those of *Triblidium*, in which case it would have to be placed under that genus; but feeling uncertain I have left it under *Metoptoma*, from the appearance of the apex. There is also some probability, judging from the appearance of the apex, that the shell had the apex reversed, like several species from this same geological position, described in Vol. 4 of the Geol. Surv. of Wisconsin; see plate 3.

Formation and locality.—In the highly silicious sandy layers of the Calciferous sandstone at Beekmantown, N. Y.

Genus TRIBLIDIUM, *Lindstrom.*

Tryblidium ? acutum, n. sp.

PLATE 7, FIGS. 9–11.

Shell small, acutely ovate as seen from above, the beak being pointed and directed backward almost on a plane with the aperture, the under surface of the apical portion being flattened so as to present the appearance of a flattened area like that of some forms of Brachiopods. Dorsal surface regularly convex from beak to base, and very obscurely subcarinate along the middle; widest part of the shell near the middle of the length, measuring from the point of the beak to the base. Substance of the shell very thin, the surface unknown, as all the specimens are denuded of the shell, but they show obscure lines which correspond to the lines of growth of the shell. Muscular imprints too obscure for absolute determination.

I am not quite satisfied of the accuracy of the generic reference of this shell, still the form of the posterior border of the under side would indicate that it probably belonged to the Genus *Tryblidium.*

Formation and locality.—From a highly crystalline limestone of the Calciferous sandrock, from four to six feet below the lower *Ophileta* beds, near Beekmantown, N. Y.

Triblidium pileolum, n. sp.

PLATE 7, FIGS. 15–17.

Shell very small, seldom more than half an inch in diameter, circular in outline to very broad ovate, and quite variable. Apex subcentral to posterior, sometimes almost overhanging the posterior margin ; height of the shell generally less than one-third of the width, and often less than one-fourth. Surface smooth so far as seen. Muscular scars unknown.

This shell resembles *T.* (*Metoptoma*) *simplex*, Bill., Pal. Foss., Vol. 1, p. 346, fig. 334;—Bull. A. M. N. Hist., Vol. 1, p. 306, Pl. 24, figs. 30 and 31, but is broader, less elevated and with the apex differently situated.

Formation and locality.—A few examples were noticed in the compact limestone near the base of the Beekmantown section of the Calciferous, but it is more common in the *Ophileta* beds above, where it occurs frequently, but from its small size and obscure form is easily overlooked.

Genus ECCULIOMPHALUS, *Portlock.*

Ecculiomphalus priscus, n. sp.

PLATE 8, FIGS. 19 AND 20..

Shell of medium size, laxly coiled, consisting of about two volutions, which increase rather rapidly in diameter and leave a space between them equal to about half the diameter of the tube opposite the space measured. Tube irregularly ovate, broadly curved on the base and on the outer surface, and acute at the upper edge. Shell moderately thick, and on the outer part of the outer volution presenting the appearance of having been lirated.

This species is closely related to *E. volutatus*, Whitf., described in Bul. No. 8, p. 314, Pl. 25, figs. 8–11, from the Birdseye limestones of Fort Cassin, and was for a time thought to be the same, but on working the specimen from the matrix it is found to increase more rapidly in size, and particularly in its depth, in proportion to the number of coils, and also to be more sharply rounded on the outer surface of the tube, while the tube is nearly an erect ovate in section, instead of irregularly and obliquely triangular, as in that one. The apparent liration on the outer half of the last volution is also a feature not shown on any specimen of that species.

Locality and position.—From a hard, dark-colored limestone layer near the base of the Calciferous limestone outcrop, near Beekmantown, N. Y., ten or twelve feet below the lower *Ophileta* bed.

Genus EUOMPHALUS, *Sowerby.*

Euomphalus calciferus, n. sp.

PLATE 8, FIGS. 12 AND 13.

Shell of rather large size, discoid in form, composed of four or more somewhat robust volutions, which have a nearly circular transverse section, and are coiled so as to be scarcely indented on the inner surface, and so nearly on the same plane that it is extremely difficult to distinguish which side is the deepest. In most of the specimens shown in section on the upper side, the inner whorl is seen to rest slightly on the outer, showing the shell to be less concave above. The substance of the shell is very thin and very crystalline, nearly always exfoliated, so that the markings of the surface are usually destroyed, but where the best preserved appears to have been nearly or quite smooth.

There appears to be considerable variation in the rapidity of increase in the diameter of the volutions of this species, and consequently some would appear to have had more volutions than others of the same diameter. It is possible that there may be more than one species represented among them, but evidence sufficiently indicative of this is not present. On one of the individuals figured, the upper surface of the outer volution is obliquely flattened from just within the periphery to the next inner volution, but as it is only for a small part of the volution, it seems accidental and not a feature of the shell. From the symmetrical coiling of the shell one might suspect close relations with the Genus *Ophileta*, but the perfectly rounded lower side of the volutions would place it in *Euomphalus*.

Genus OPHILETA, *Vanuxem.*

Ophileta complanata.

PLATE 7, FIGS. 18-25.

Ophileta complanata, Vanuxem; Geol. Rept. 3d Dist. N. Y., p. 36, fig. 2.—Hall, Pal. N. Y., Vol. 1, p. 11, fig. 2, and Pl. 3, fig. 6; also *O. levata*, Vanux.

Ophileta compacta, Salter; Can. Org. Rem. Decade 1, p. 16, Pl. 3.

? *Ophileta nerine*, Bill., New Palæozoic Foss., Vol. 1, p. 245, fig. 232.

This shell was originally figured from very imperfect material from Calciferous sandstone from the Mohawk Valley, where the specimens are usually broken in such a manner as to present on the surface of the block, the cast of the interior of the flat side of the shell, with the crystalline matter of the shell itself between the coils. This is produced by the entire flat surface of the shell being removed in a single plate on the matrix, exposing the cast of the coils below. This frequently gives them the appearance of having nearly double the volutions which they really possess, and of the volutions being correspondingly more slender than they really are. Shells of an inch in diameter have usually about four volutions; those of one and four-tenths, four and a half. Shells occur sometimes of nearly or quite two inches in diameter among collections from Beekmantown on Lake Champlain, where the species is extremely abundant. From these the following characters are obtained:

Shells discoidal, planorbiform, coiled on the same plane; flat or but slightly concave on the lower surface, and more deeply concave above, the increased height of the volution being upward on the outer coils so as to leave the outer edge of the inner coils but slightly above the succeeding volution. Periphery flattened obliquely, the lower edge of the volution being the largest, and rounded to the base, while the upper angle is sharply carinate. Upper surface of each volution rapidly and obliquely sloping to the volution within it, giving the depressed spire. Aperture trapezoidal, the columellar face, or that in contact with the inner coil being the shortest. Substance of the shell thick, the surface transversely striated on the top and below, with frequent strongly-marked undulations on the flattened side and back of the volution, the latter being directed strongly forward in the middle.

The inner two or two and a half coils of this species, when the shell is preserved, present precisely the appearance represented by Vanuxem's figure of *O. levata*, as given both by Vanuxem and Hall, and I am inclined to believe that the two species, as recognized by these authors, are only two phases of the same species under two conditions of preservation. In regard to *O. compacta* of Salter, described from Canada, there cannot be the least shadow of doubt of its being the same as the New York shells, only preserving the exterior instead of representing the broken internal casts.

Formation and locality.—Extremely abundant in the shaly and compact layers of the Calciferous sandstones at Beekmantown, N. Y. Collected by Prof. H. M. Seely.

Genus MACLUREA, *Lesueur.*

Maclurea sordida.

PLATE 8, FIGS. 1–4.

Maclurea sordida, Hall ; Pal. N. Y., Vol. 1, p. 10, Pl. 3, fig. 2.
Ellipsolites (Vanuxem), Hall, loc. cites. (For *Ellipsolites*, Conrad, see Emmons, Geol. Rept. 3d District New York, p. 385.)
Straparollus sordidus (Hall), Emmons, Am. Geol., Vol. 1, p. 156, Pl. 3, fig. 6.

This species is very abundantly represented among collections from near Beekmantown, N. Y., both in the condition as figured by Prof. Hall, and with the shell preserved. Prof. Hall's description, given in Vol. 1, Pal. N. Y., is as follows: "Shell discoidal; spire not elevated; mouth slightly expanded; surface apparently smooth." In this description it is supposed the flattened surface was looked upon as the spire. The better preserved specimen from the unweathered limestones, where the shell is preserved, show the following characters:

Shell subdiscoidal; whorls two to two and a half in number, very rapidly increasing in diameter with increased growth, slightly disconnected in most instances, strongly rounded on the upper side with the apex deeply sunken, flattened on the lower side, and the peripheral edge rather sharply rounded. Shell thick, the surface ofttimes smooth with only faint lines of growth, but many specimens show strong, even, rugose, transverse striæ, with more distant undulations. The transverse lines of growth show a broad forward curvature between the inner and outer margins of the volutions on the lower flattened surface, and a broad retral curvature on the upper or rounded surface. Aperture semicircular, receding on the upper side.

Were it not for the carina described and figured by Mr. Billings on his *Ophileta? disjuncta* (Pal. Foss., Vol. 1, p. 344, fig. 331, *a* and *b*), I should be inclined to consider it as identical with this one; but there is no such feature apparent on any individual of this species, among the many observed. The under surface, as shown in his figure 331 *b*, is so exactly similar to the flattened surface of this, that one would naturally suspect their identity.

Formation and locality.—Quite abundant in the different layers of the Calciferous sandrock at Beekmantown, N. Y. Collected by Prof. H. M. Seely.

Genus HOLOPEA, *Hall.*

Holopea turgida.

PLATE 9, FIGS. 3-7.

Pleurotomaria? turgida, Hall; Pal. N. Y., Vol. 1, p. 12, Pl. 3, figs. 9 and 10 and 8?—Billings, Pass. Nat. & Geol., Vol. 4, p. 350.

Prof. Hall described this species from two fragments, obtained from the cherty material, found loose in Saratoga County, N. Y.

His description is as follows: "Depressed-conical; whorls about four, subangular, rapidly increasing from the apex; last whorl very large, ventricose, expanded; height and greatest breadth about equal."

Specimens somewhat larger, less imperfect, and retaining nearly three volutions, occur in the collections from Lake Champlain, in which the form is uncompressed, and although mostly exfoliated, some of it retaining the surface is preserved. The form is extremely robust, full and round, having an apical angle of something more than ninety degrees; the volutions are very ventricose, almost inflated, and very rapidly increase in diameter with the growth of the shell. There have probably been from four to four and a half volutions to the specimen where the spire was perfect. Suture deep and strongly marked. Aperture obliquely subovate, and slightly subangular on the lower side, without any apparent thickening of the shell on the inner side, leaving a rather distinct umbilicus. The substance of the shell is very thin, with a comparatively smooth surface.

The species is quite large, having had a transverse diameter of fully two inches, and a height of about one and three-fourth inches. It is closely like *H. obesa*, Whitf., described in Vol. 4 of the Geol. of Wisconsin, p. 348, Pl. 27, fig. 11, but the volutions are rounder and more upright, not being as obliquely compressed on the upper side as in that species.

Locality and formation.—In the compact, semisilicious layers of the Calciferous sandstone at Beekmantown, N. Y. Collected by Prof. Henry M. Seely.

Genus TROCHONEMA, *Salter.*

Trochonema exilé, n. sp.

PLATE 9, FIGS. 1 AND 2.

A small species, known only by the cast, and from only one fairly perfect, with parts of a few others, occurs among the Calciferous limestone specimens. It is broadly conical, rather more than two-thirds as high as wide, and consists of about three volutions in the most perfect example. Apical angle about eighty degrees. Volutions, in the cast, nearly circular, as wide as high, with a perceptible flattening on the periphery, giving a slight angle above and below. Umbilicus rather small, not showing the upper volutions within its cavity. Surface features unknown.

Of the type of *T. umbilicata*, but proportionally higher, with a narrower umbilicus, and less distinctly angular volutions. It more closely resembles a small *T. Beachi*, or *T. Beloitense*, Whitf., from the Trenton limestones near Beloit, Wis. (see Geol. Surv. Wis., Vol. 4, 1882, pp. 212 and 213, Pl. 6, figs. 6, 7 and 8), but the volutions are so much more slender, proportionally, as to preclude the possibility of any specific relationship.

Formation and locality.—In the dark, crystalline layer of the Calciferous limestone, below the lower *Ophileta* bed, at Beekmantown, N. Y.

Genus RAPHISTOMA, *Hall.*

Raphistoma prævium.

PLATE 8, FIGS. 5–7.

Shell of medium size, compressed lenticular; upper surface more compressed than the lower; apical angle of the spire about one hundred and thirty degrees as an average of many specimens. Volutions four to five in number on examples of an inch to an inch and a quarter in diameter, flattened in the direction of the slope of the spire, and sharply carinate on the periphery, the sutures being invisible; lower side of the volution rather more abruptly sloping than the upper, sharply angular at the margin of the very broad open umbilicus, which forms more than one-third of the entire width of the shell; inner surface of the volution sloping into the cavity, so as to give an even surface on the sides of the umbilicus. Aperture trapezoidal or subtriangular, transverse and sharply angular at the outer edge, the lip rapidly receding both above and below toward the edge of the volution; surface striæ very faint on the upper surface, but forming rather distinct undulations on the under side.

This shell is more compressed than any of the previously described forms, but the most important specific feature consists in the very broad umbilicus.

Formation and locality.—Very numerous in the compact semi-crystalline limestones of the Calciferous sandstone, at Beekmantown, N. Y. In collections received from Prof. H. M. Seely.

Genus PLEUROTOMARIA, *De France.*

Pleurotomaria Beekmanensis, n. sp.

PLATE 8, FIGS. 8–11.

Shell small, highly conical, having an apical angle of from sixty-five to seventy-five degrees, with the surface of the volutions sloping smoothly in the direction of the spire. Volutions four and a half to five, trapezoidal in section, angular on the lower margin, and somewhat rounded below. Umbilicus large, forming one-third of the width of the base. Periphery with a very narrow flattened band at the base, which has been narrowly notched. Surface with fine transverse striæ which are directed strongly backward in crossing the volution from above, and on the base are directed strongly forward from the margin to the edge of the umbilicus.

This species is of the type of *Pleurotomaria Etna*, and *P. Ramsayi* of Billings; from the first it differs in the more conical form, and from the last, which it more closely resembles in the greater width of the umbilicus, which in the *P. Ramsayi* is scarcely visible, and in the fuller, more convex base.

Formation and locality.—In compact limestone layers of the Calciferous sandstone, at Beekmantown, N. Y. Collected by H. M. Seely.

Genus MURCHISONIA, *D'Arch. & Vern'l.*

Murchisonia gracilens, n. sp.

PLATE 8, FIGS. 14 AND 15.

Shell small to medium size, very slender, the apical angle being not more than from sixteen to eighteen degrees. Whorls very numerous, the upper quarter of an inch of the spire of a small individual having six or more in number, while other specimens, imperfect above, must have had a length of an inch or more. Volutions ventricose, smooth or with but a very slight angularity near the middle of the exposed portion; sutures deep and strongly marked. Columella and aperture unknown.

This is perhaps more nearly allied to *M. gracilis*, H., than to any other Lower Silurian species, but is even more slender than that one, and the volutions increase more rapidly in length in proportion to their diameter, which gives it a more slender form. The band on the middle of the volution has not been observed, as the examples are mostly weathered on the surface.

Formation and locality.—Quite numerous on weathered surfaces of the Calciferous sandstone, holding *Ophileta complanata*, Vanux., in great numbers, at Beekmantown, N. Y., mostly in sections weathered down on the solid limestone surface. Collected by Prof. H. M. Seely.

Murchisonia? confusa, n. sp.

PLATE 8, FIGS. 16–18.

Shell varying from three-fourths of an inch to about one inch in length, and composed of about six volutions in the longer specimens, with an apical angle of from twenty to twenty-five degrees. Volutions convex, angular in the lower part, with deep, well-defined sutures between them ; lower side of the volution somewhat flattened. Surface, so far as can be determined, smooth, the sutural band not observed.

This species occurs in great numbers on certain layers of limestone and shale, the material being largely composed of the remains of this fossil, and in the limestone beds with a species of *Stromatopora* or *Cryptozoon*. The species differs from others described in the angularity of the volutions and in its more rapid increase than in most of those from this low horizon.

Formation and locality.—Some specimens of thin bedded semi-crystalline limestones, from Shoreham, Vt., thought by Prof. Seely to be of the same geological horizon as the Fort Cassin beds, which are probably Birdseye. But the limestones containing them unfortunately contain no other recognized form than *Primitia Seelyi*, herein described, so the horizon remains somewhat doubtful.

Genus LOPHOSPIRA, *Whitf.*

Lophospira Calcifera, n. sp.

PLATE 9, FIGS. 8 AND 9.

Shell, so far as known at present, of medium size, biconical, and broadly spreading, the apical angle of one example being over one hundred degrees, that of another, somewhat doubtfully referred to it, being rather less than ninety degrees. Volutions as seen on the above-mentioned examples two and a half to three, strongly convex, rapidly enlarging and strongly sub-angular in the middle, with the surface moderately convex between the suture or base and the median angulation. Aperture obliquely subquadrate, higher than wide; columellar lip thickened and tortuous, extending the aperture somewhat below. Surface of the shell unknown, but the cast is marked by undulations which recede from above and below to the angulation of the whorl, indicating a deep angular notch-like margin of the outer lip of the aperture.

This species closely resembles *L. Casina*, Whitf., Bull. A. M. N. H., Vol. 1, No. 8, Pl. 25, fig. 4, but not so much the typical form—and it is probable that there are two species included under that name.

Formation and locality.—Occurs in the dark blue crystalline layers of limestone, below the lower *Ophileta* beds of the Calciferous, at Beekmantown, N. Y.

Genus BUCANIA, *Hall.*

Bucania tripla, n. sp.

PLATE 9, FIGS. 12 AND 13.

Shell small, involute, closely coiled, so as to bring the dorsum of the inner volution within the area of the aperture of the last one. Volutions three or more, increasing somewhat rapidly in width in proportion to the dorso-ventral diameter; umbilicus large, open, its margins narrowly rounded; aperture as wide again as long, trifoliate on the outer side, and modified on the inner by the preceding volution. Dorsal surface deeply trilobed by broad sulci on each side of the strongly elevated and rounded dorsal lobe, which is somewhat narrower than the lateral lopes at the same point. Surface smooth.

This species is of the type of and closely resembles small specimens of *B. trilobata*, Con., from the Clinton group in Oneida County, N. Y., but may be distinguished by having the dorsal lobe proportionally narrower—while the species so far as known at present is much smaller, the largest individual of several being scarcely more than one-fourth of an inch in width.

Formation and locality.—Several specimens of this species occur in a small block, picked up loose at Providence Island, Lake Champlain, and is probably from the same horizon as the Fort Cassin beds, or Birdseye limestone. They are associated with *Leperditia Seelyi*.

Genus ORTHOCERAS, *Brynius*.

Orthoceras primigenium.

PLATE 10, FIG. 1.

Orthoceras primigenium, Vaunxem, Geol. Rept. 3d Dist. N. Y., p. 36, fig. 4.—Pal. New York, Vol. 1, p. 13, Pl. 3, figs. 11 and 11 *a*.

But little additional information is obtained about this species. A single specimen, a longitudinal section, nearly three inches long, of a specimen somewhat larger in diameter than the larger one figured by Prof. Hall in Vol. 1, Pal. N. Y., is present in the collection. It presents about the same rate of increase in diameter as Fig. 11 on Hall's plate, but the septa are much more distant; three of the chambers occupying the same space as five do on that one, and the septa are not so deeply concave. Still in both these features it agrees with another fragment from the Mohawk Valley, occurring on the same block with the type examples of *Maclurea matutina* figured by Hall. The shell is too highly crystalline to separate from the matrix so as to show the outside structure, and I am not certain even of having observed the siphon. But what I suppose to be that organ, where the specimen was broken for the purpose of obtaining it, is very small and subcentral.

Formation and locality.—The specimen mentioned is from the Calciferous sandstone at Beekmantown, N. Y., and was collected by Prof. H. M. Seely.

Genus CYRTOCERAS, *Goldf.*

Cyrtoceras Kirbyi, n. sp.

PLATE 10, FIGS. 4–7.

Shell of moderate size, strongly arcuate and laterally compressed, having an ovate transverse section which is rather more than three-fifths as wide as long, and the widest part of the section within the median line as regards the curvature, and the narrowest at the dorsum, which is narrowly rounded ; tube rather moderately increasing in dimensions with increased length. Septa deeply concave, strongly arcuate on the side and extended forward on the back of the tube, somewhat numerous and closely arranged, six of the chambers near the outer part, on the dorsal edge, measuring half an inch. Siphon rather small, in contact with the shell at the dorsal margin, exposing nearly its entire diameter where the shell is removed, and apparently slightly swollen within the chambers. Outer chamber proportionally long, not known to be constricted near the aperture. Surface of the shell smooth and moderately thick.

Somewhat resembles *Oncoceras plebium*, Hall, from the Trenton limestone, but is more compressed, more acutely rounded on the back, and has the septa much more closely arranged.

Formation and locality.—From the dark blue band of limestone of the Calciferous, below the lower *Ophileta* bed, at Beekmantown, N. Y.

Cyrtoceras Beekmanensis, n. sp.

PLATE 10, FIGS. 2 AND 3.

Shell of moderate size, nearly straight, the arcuation being not more than one-eighth of an inch in a length of three inches, or one-twenty-fourth of the length; tube laterally compressed, giving a very slightly oval section, the lateral diameter being somewhat less than the dorso-ventral. Septa numerous, seven chambers occur within the space of half an inch on the side of the tube near the upper end of the septate portion, not greatly arcuated and of but shallow depth, rather strongly advanced on the inner side of the tube. Siphon unknown. Outer chamber quite long. Surface of the shell apparently smooth.

This species is so slightly curved, that were it not for the arcuation of the septa and their forward extension on the edge of the shell, one might readily suppose it to be an *Orthoceratite.* But these features are so marked as to leave no doubt of its generic relations. I know of no species of the genus from the lower formations that approaches it in character.

Formation and locality.—In the crystalline limestone layer of the Calciferous, below the lower *Ophileta* bed, at Beekmantown, N. Y.

Cyrtoceras Raei, n. sp.

PLATE 10, FIGS. 8 AND 9.

Known only from a fragment having a length of one and three-fourth inches, preserving a small part of the outer chamber and a part of the septate portion. The shell has been strongly arcuate and rather rapidly increasing in diameter, while the surface has been marked by concentric undulations, about once and a half as distant from crest to crest as the breadth of the chambers at the same part of the shell. Tube of the shell transversely broad-oval. Septa moderately distant, seven to eight of the chambers equal in length to the transverse diameter of the shell at the middle of the chambers counted, moderately concave, rather strongly arching upward on the back of the shell, and concave on the sides. Siphon rather small, its diameter less than the height of a single chamber at the same point, somewhat expanded within the chambers, giving it a somewhat beaded character as seen on the back of the specimen, close upon which it is situated.

No annulated forms of Cyrtoceras have been heretofore described from this geological horizon so far as I can ascertain.

Formation and locality.—In the Calciferous sandstone at Beekmantown, N. Y. Collected by Prof. H. M. Seely.

Genus PRIMITIA, *Jones.*

Primitia gregaria, n. sp.

PLATE 13, FIGS. 3–5.

Largest valves observed somewhat less than one-sixth of an inch in length, of an obliquely oval form, the straight hinge line being less than the width of the oval, and equal to about three-fifths of the length of the valves; cardinal angles distinct. Surface highly convex, the greatest elevation being across the narrow end of the oval; sulcus poorly defined, extending from the hinge to near or beyond the middle of the height, broadly triangular in outline; tubercles variable, generally three, situated one on each side of the sulcus and one near its lower extremity; margin with an indistinct border in some cases, but not making a constant feature; surface of the crust marked by numerous rather distant pits.

This species is somewhat variable in its characters, although usually having the same outline; the tubercles and sulcus are extremely variable, the former in number and position as well as in their proportional size. Nor does this appear to be owing to the condition of preservation. On the smaller individuals the sulcus is usually the most distinctly marked, while the tubercle next behind the sulcus is often the largest in these small specimens, though in several of the most perfect the anterior tubercle is much the most distinct. These variations have led me to fear that possibly there may be more than a single species among them, still I fail to find distinguishing features. On several specimens the more central tubercle shows ramifying vascular lines running backward from its centre, these being evidently individuals which retain the crust.

Formation and locality.—Slabs of a black bituminous shale, from Cave Island, Ball's Bay, Vt., on the east shore of Lake Champlain, supposed to belong to the Calciferous formation, are densely covered with valves of this species and *P. cristata*. The geological horizon may be somewhat doubtful, but the best evidence obtained would place it at the above horizon. The limestones above and below this thin band are unfossiliferous, and the shales contain none except these two species.

Primitia? cristata, n. sp.

PLATE 13, FIGS. 1 AND 2.

Valves attaining a length of one-sixth of an inch or over, transversely ovate and moderately convex, narrowed toward the anterior end and distinctly margined by a more abruptly spreading but not thickened rim, which extends all around except on the hinge margin, which is straight and about equal to two-thirds of the entire length of the valve; cardinal angles somewhat obscure. Sulcus well marked but not distinctly defined, situated anterior to the middle of the valve, but not extending much below the middle of its height; bordered by a tubercle in front and one behind, with a third in the line of the sulcus and just above the middle of the valve. Another elongated, transversely oblique, ridge-like tubercle, rises abruptly just in front and just below the centre of the valve and parallel to its basal margin. Surface marked with numerous scattered pits, more faintly marked and finer near the margins.

The distinguishing feature of this species is the obliquely transverse ridge-like tubercle, which is very prominent, but often broken off in separating it from the rock.

Formation and locality.—Occurs in the black bituminous shales, probably of Calciferous age, on Cave Island, Ball's Bay, Lake Champlain, associated with *P. gregaria*, and is somewhat abundant.

Primitia Seelyi, n. sp.

PLATE 13, FIG. 6.

Valves about one-sixth of an inch in length, and about two-thirds as wide as long, with the straight (dorsal) margin rather more than three-fifths of the entire length. Valves prominently convex and distinctly wider at one end than at the other; cardinal angles distinct but not very prominent. Anterior and posterior ends bordered by a proportionally wide, flattened margin, which gradually narrows along the basal border and becomes obsolete over one-third of its length. Surface covered with moderately large, depressed pits, most of which have an elevated granule in the centre. No true sulcus or tubercle appears on the specimens, but in the place of these features there is a nearly circular spot, and above it a rapidly widening area, extending to the dorsal border, which is destitute of the pits marking the remainder of the surface.

This species is so distinct from any other known that there can be little chance of mistaking it. The character of the punctæ and the naked spot representing the tubercle and sulcus, would be good distinguishing features.

Formation and locality.—Several individuals of large size occur in the dark blue layer of crystalline limestone, from Shoreham, Vt.; and in some water-worn fragments of a granular limestone from Providence Island, in Lake Champlain, they occur in great numbers, the limestone being largely composed of them. Prof. Seely thinks this geological horizon may be the same as the Fort Cassin rocks.

Genus BATHYURUS, *Billings.*

Bathyurus conicus.

Plate 13, Figs. 15–21.

Bathyurus conicus, Billings; Can. Nat. & Geol., Vol. 4, pp. 365 and 366, fig. 12*c*.—New Pal. Foss., Vol. 1, p. 352.

Several glabellas of this species have been observed among the fossils from the Calciferous sandstone. They are of about the size of the figure given by Mr. Billings, and agree perfectly in all particulars. The crust is usually left in the matrix, but the pustulose surface is perfectly shown on the glabella, fixed cheeks and frontal limb. The glabella is quite conical or slipper-shaped, rounded at the anterior end and nearly straight across the occipital border; no appearance of true glabellar furrows can be detected, but a slight construction in width occurs opposite the anterior point of the palpebral lobe. The lobe is prominent and of moderate size, and the fixed cheeks and frontal limb within the anterior furrow narrow, and the latter is margined by a distinctly rounded, prominent border. Occipital ring low rounded and the furrow narrow but shallow. Pustules of the surface large and distant from each other about equal to their own diameter. Lateral limbs imperfectly observed, but apparently broadly triangular. A small fragment of a movable cheek shows four rows of pustules between the furrow outside of the palpebral lobe and the marginal furrow.

Pygidium semicircular, or transversely elliptical, with the anterior margin about two-thirds as sharply curved as the posterior or outer margin; the outer margin of the plate bordered by a narrow, flattened rim. Surface strongly and nearly equally trilobed, the axial lobe extending to the posterior margin, where it is obtusely pointed. Axial lobe marked by five transverse rings, including the terminal ones; rings short, strongly and almost sharply elevated, the intervening spaces being wider than the rings, each ring marked by a central spine-like tubercle, and one or two lateral nodes, the terminal ring having two principal tubercles. Lateral lobes marked by four rings, with from two to four nodes on each in one or two rows. Intermediate surface smooth.

Formation and locality.—In the subcrystalline layers of the Calciferous at Beekmantown, N. Y. Collected by Prof. H. M. Seely.

Bathyurus Seelyi, n. sp.

PLATE 13, FIGS. 8–14.

This species is known from the imperfect central parts of the head, separated movable cheeks and pygidia. No thoracic parts have been observed in a condition to identify as belonging to the other parts.

The head shield, exclusive of the movable cheeks, is elongate quadrangular, being about four-fifths as wide across the eye-lobes as the length from the extreme of the occipital ring to the front of the anterior marginal rim. Glabella conical, rounded at the apex, and moderately convex, no glabellar furrows are visible on most of them, a single one showing faint indications of a single median pair in the constriction of the sides at this point; dorsal furrows distinct but not deep. Frontal border rather wide, nearly half as wide as the glabella, when the rim is included. Eye lobes large, elevated, situated opposite the middle of the glabella. Lateral limbs narrow but elongate. Occipital ring and furrow narrow. Front marginal rim elevated, but narrow. Surface smooth.

Movable cheek quadrangular, or trapezoidal, with a large, not deep, occular sinus; rim elevated, rounded and narrow; disc convex and smooth.

Pygidium nearly semicircular, or somewhat paraboloid, the length and breadth being about as two to three, highly convex on the surface and with an extremely wide and rounded axial lobe, its width being but little less than one-half of that of the entire plate; sides of the axial lobe nearly parallel, its extremity extending nearly to the margin behind, and very obtusely rounded; rings of the lobe broad, slightly convex between the furrows, and three in number, exclusive of both terminal ones. Lateral lobes triangular, marked by three segments exclusive of the anterior one, each of which bears a very faint median furrow along its outer half. Margin of the plate very abruptly sloping, almost vertical and but little thickened. Surface smooth.

It is probable that this species is identical with one from Comstocks, Washington County, N. Y., mentioned by Mr. Billings as very closely allied to *B. Cordai* (see New Pal. Foss., Vol. 1, p. 260), but which I do not find elsewhere described. The species differs somewhat from *B. Cordai*, B., in the form of the glabella, too much to be classed as identical without a knowledge of the other parts of that species than the glabella alone, as there are fewer points of differences on that portion between different species than on almost any other part of the organism.

Formation and locality.—In the lower six or eight feet of the Calciferous sandrock as exposed at Beekmantown, N. Y.

ARTICLE IV.—*Additional notes on Asaphus canalis, Conrad.* By R. P. WHITFIELD.

PLATES 11 AND 12.

In the Museum Bulletin No. 8, p. 336, Vol. 1, I have described features of this species, as presented on fragments and isolated parts, found among the collections of material from Fort Cassin, on Lake Champlain. During the autumn of 1887, Prof. Seely, of Middlebury College, Middlebury, Vt., obtained from the same geological formation a much more entire individual, which he kindly placed at my disposal for further illustration. The specimen retains a portion of the glabella and most of the movable cheek of the right side, including the eye; also the greater portion of all the thoracic segments and the pygidial plate, the latter being bent downward nearly at right angles to the thorax and head. The form of the body is broadly oval, and as nearly as can be determined from the specimen somewhere about three-fifths as wide across the thorax as the entire length of the whole body. The thorax is very distinctly trilobed, the lobes being rounded and the dorsal furrows broadly concave without distinct limitations, and the axial lobe forms about one-third of the entire width. The head shield and pygidial plate are nearly semicircular in outline, and of nearly equal size, and in their normal form are nearly as wide again as long; the head shield having nearer these proportions than the pygidium. As compared with *Asaphus gigas* of the Trenton limestones, this species is much broader in proportion; both the head and tail plates being shortened in producing the semicircular form, and the axial lobe is very much narrower in proportion to the whole width of the thorax. The thoracic rings are also shorter from the anterior to the posterior margins than in *A. gigas,* making the whole thoracic section shorter in proportion to the width. This leaves the lateral lobes wider in *A. canalis* than in *A. gigas* in examples of similar size. Besides these differences in general form there are many points of difference in the minor details, as the elongated cheek spines, which are shown on one side of the specimen to have extended almost to the posterior line of the thorax; the broad channeling of the margin of the head and tail; the more distinct axial lobe of the tail plate, which is always quite prominent at its posterior extremity; the less antero-posterior extent of the thoracic rings, as well as the narrower axial lobe, and the difference of the form of the anterior border of the glabella and change in the direction of the suture line at this point. All these differences are readily distinguishable on the exterior of the specimen, irrespective of the great difference which would be apparent on the lower surface of the head and tail, and that pointed out between the hypostomæ of the two species in Bulletin No. 8, p. 338. Unfortunately the specimen here used does not show the form of the extremities of any of the plura, so as to present grounds for a comparison of these parts. As far, however, as they can be seen they would appear to be more slender or narrower at the outer ends accordingly than those of *A. gigas.* The species would appear on the whole to be a very strongly marked and distinct one, differing essentially from any other known form of *Asaphus.*

For the specimen illustrated, which has also furnished the basis for these comparisons, the Museum is indebted to the disinterested liberality of the collector, Prof. Henry M. Seely, of Middlebury College, Middlebury, Vt.

ARTICLE V.—*Description of a new form of fossil, Balanoid Cirripede, from the Marcellus shale of New York.* By R. P. WHITFIELD.

Among the fossil crustacea of the Palæozoic formations, Cirripedes have never formed a conspicuous feature, and those which are known are, with a single exception, forms pertaining to the pedunculated group *Lepadidæ;* while sessile forms like the modern *Balanus* have been entirely unknown until very recently—with that one exception, a supposed *Balanus (B. carbonaria*, Petzhold*) from carboniferous rocks at Pottschappel, near Dresden, Saxony; but which from their mode of occurrence would give one the impression they might be palatal teeth of fish, like *Orodus*, rather than shells of *Balanus.* Exclusive of this one form, we have no published evidence of any species of sessile Balanoid form in Palæozoic rocks. Hence the discovery of a fossil, presenting features of a true Balanoid in rocks of the lower Devonian, may be considered a matter worth recording.

The form here noticed was first discovered in September, 1879, among specimens of Marcellus shale from Avon, Genesee County, N. Y. The block on which it occurs contains numerous examples of *Leiorhynchus limitaris*, Vanux., with *Ambocœlia umbonata*, *Chonetes mucronatus* and *Leiopteria lævis*, Hall. The specimen is of minute size, and of an ovate form, with but a slight elevation ; the length is about four and one-third m.m., by a little more than three m.m. in its greater width, exclusive of a narrow fringe-like border which surrounds it, except on the carinal end. It differs from any known form of Balanoid type in the greater number of plates forming the crown or circle, and still more so in the form, arrangement and number of plates representing the opercular plates of the modern forms. In consequence of these important differences it will be necessary to propose for it, not only a new generic name, but also a new sub-family name under the *Balinidæ.* I therefore propose to designate it by the generic name *Protobalanus*, and the sub-family name *Protobalanine*, with the following diagnosis :

Protobalanine, n. sub-fam. **Protobalanus,** new genus.

Shell sessile, the crown consisting of twelve plates, including a carinal, a rostral and ten laterals, five of the latter on each side.

---

* Neus Jahrb. fur Mineralogy, &c., 1842, pp. 403–409, Pl. 4.

Also possessing seven (?) opercular plates, arranged in three pairs with a single one in advance of the forward pair.

The only individual known of this form is imperfect, the crust from fully two-thirds of the opercular area being broken away, carrying with it the points of the two lateral and of the rostro-lateral plates on the left side, and of the rostro-lateral and the adjoining lateral on the right side of the shell, with all the opercular plates except the anterior single plate. These latter plates have, however, left their impressions on the filling, and if these are rightly determined and understood, there have been three pairs, besides the one, yet in place. Along the central line of this denuded area there remains an elevated, zig-zag ridge, showing the junction of plates of the two lines, and on the left side their prolongation inward. These plates would seem to have been hexagonal in outline, but their absolute form and arrangement cannot be determined. The single anterior plate, which is supposed to be an opercular plate, is placed between the points of the anterior laterals, behind the carino-laterals, and is low, rounded and node-like on the surface. That the features which are here described represent the opercular appendages I cannot doubt, although they are too obscure to afford means for positive assertion. Hence this part of the generic diagnosis must be considered as somewhat doubtful. The points wherein this form differs most conspicuously from all other Balanoids is in the greater number of plates forming the crown, and is equivalent to the features upon which the other sub-families of the *Balanidæ* is based.

Protobalanus Hamiltonensis, *Whitf.*[*]

PLATE 13, FIG. 22.

Protobalanus Hamiltonensis, Whitfield, Pal. N. Y., Vol. 7, p. 209, Pl. 36, fig. 23.

Shell ovate, three-fourths as wide as long, narrowest at the carinal end, and but little elevated. *Carinal* plate subcircular in outline, or semicircular on the external face, elevated and terminated at the apex in a rounded tubercular boss, from which the rays of the anterior face originate. Rostral plate proportionally short and broad, being a little more than twice as wide as high, the outer or parietal portion is broadly triangular, and has the apex but little elevated above the radial surfaces. *Carino-lateral* plates forming a nearly equilateral triangle on the outer surface, the posterior face being slightly longer than the other. *Rostro-laterals* smaller than the carino-laterals, and narrower in proportion. *Laterals* elongate-triangular, nearly once and a half as high as wide, but somewhat variable. Radial surfaces wide in proportion to the width of the plates, only moderately depressed, the markings of their surfaces not distinguishable, nor are the sutures between the plates discernable.

---

[*] For the purpose of including this form in the Volume of the New York Palæontology, devoted to this class of fossils, the generic and specific names were given to Prof. J. M. Clarke, and the specimen loaned for illustration in that work previous to being published. See Pal. N. Y., Vol. 7, p. 209, Pl. 36, fig. 23. In the figure there given the artist has not fully portrayed the features of the specimen. Prof. Clarke has also described a second Palæozoic form of Balanoid *Palæocreusia*. R. P. W.

External surfaces of the plates marked with longitudinal, rounded ridges. The *Carina* having twelve ribs, one of which is bifurcated. *Rostrum* with eight ribs. *Carino-laterals* with six each. *Rostro-laterals* with four each, and the laterals having three each. This formula is varied, in the specimen, by having only three ribs present on the right rostro-lateral plate, and four on the adjoining lateral.

Opercular plates, so far as can be determined, seven in number, arranged in three pairs with one or perhaps two central ones in advance.

Around the margin of the rostral plate, and all of the lateral plates, there appears to be a narrow fringe, which is radiately marked corresponding to the rays of the several plates. This fringe is not seen bordering the carinal plate. (On the left side the shell of a *Leiorhynchus limitaris* covers a portion of the fringe.) On some of the plates the fringe appears to have the ribs doubled, as if a bifurcation had taken place at the margin of the plate.

Locality and position.—The specimen is from the Marcellus shale in the town of Avon, Genesee County, N. Y., and belongs to the Cabinet of the Museum.

EXPLANATION OF PLATE 7.

Orthis Macloedi, n. sp.	Page 43.

Figs. 1–3. Views of a dorsal ? and two ventral valves.
Fig. 4. Enlargement of the striæ.

Triplesia radiata, n. sp.	Page 43.

Figs. 5 & 6. Views of dorsal valves, enlarged.
Figs. 7 & 8. Views of ventral valves, enlarged.

Triblidium acutum, n. sp.	Page 45.

Figs. 9 & 10. Enlarged back and lateral views of a specimen.
Fig. 11. View of the aperture, showing the flattening of the under side of the apex.

Metoptoma alta, n. sp.	Page 44.

Figs. 12 & 13. Lateral and vertical views of the type specimen.

Triblidium pileolum, n. sp.	Page 46.

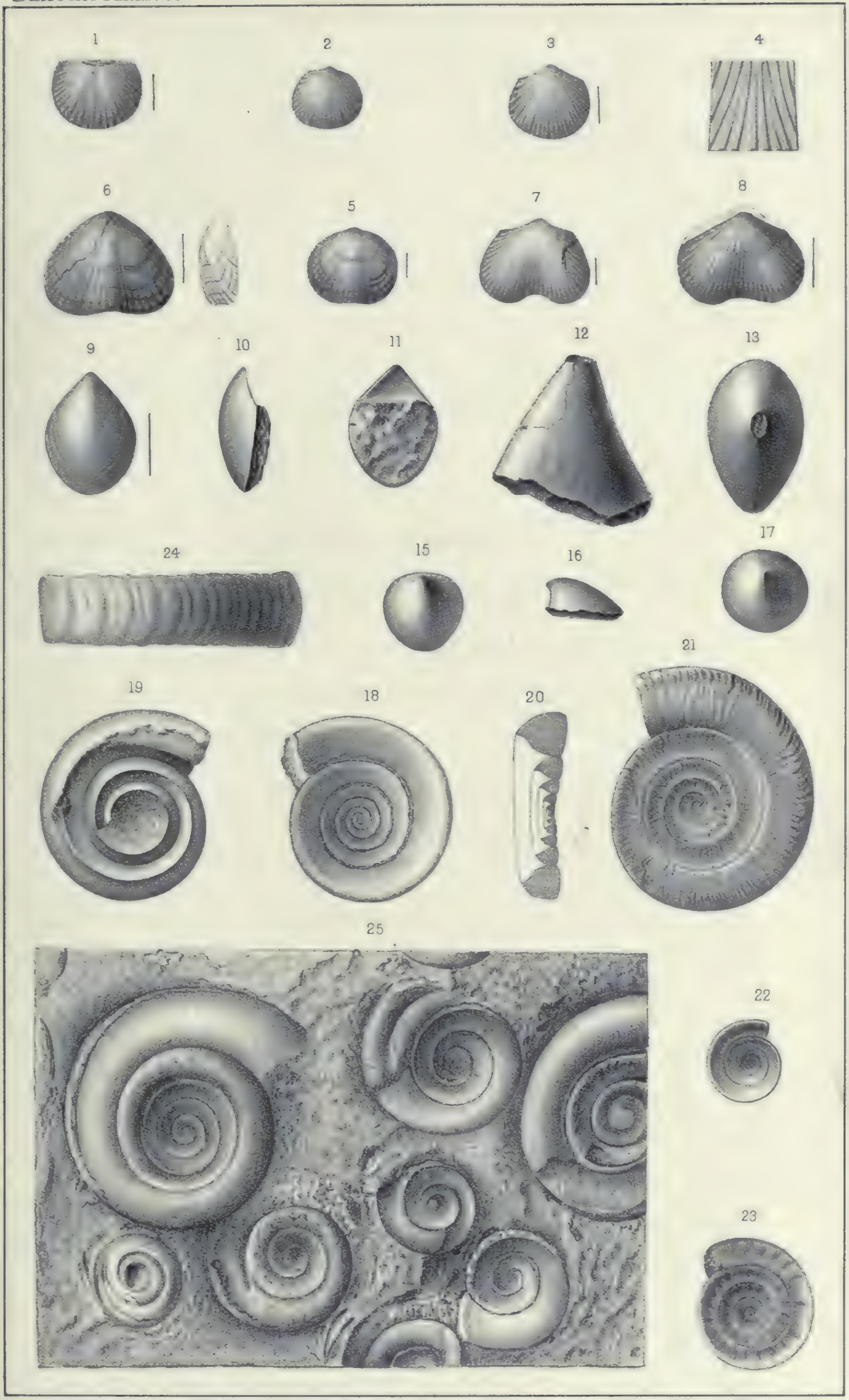
Figs. 15 & 16. Two views, natural size, of an ovate form.
Fig. 17. Vertical view of a more circular specimen.

Ophileta complanata, Vanuxem.	Page 48.

Figs. 18, 19 & 20. Lower and upper surfaces of a specimen of medium size, and an ideal section of the same.
Fig. 21. Lower surface of a specimen retaining the shell.
Fig. 22. Upper side of a small individual showing the depressed spire—*O. lævata,* Vanux.
Fig. 23. Lower side of a smaller shell retaining the surface.
Fig. 24. Enlarged view of the back of specimen fig. 23.
Fig. 25. Surface of a slab showing the specimens as they occur on the rock for many square feet together.

LAKE CHAMPLAIN FOSSILS.

Bulletin A.M.N.H.
Vol. II, No. 2, Plate 7.


1
2
3
4
6
5
7
8
9
10
11
12
13
24
15
16
17
21
19
18
20
25
22
23

L.P.G. & R.P.W. del.
Geo. S. Harris & Sons Lith. Phila.

EXPLANATION OF PLATE 8.

Maclurea sordida, Hall. Page 49.

Figs. 1 & 2. Views of the lower sides of different specimens.
Figs. 3 & 4. Views of the upper and lower sides of a partial cast.

Raphistoma prævium, n. sp. Page 52.

Figs. 5–7. Upper, lower and profile views of a large specimen.

Pleurotomaria Beekmanensis, n. sp. Page 53.

Figs. 8–10. Three views of a nearly entire individual.
Fig. 11. Lateral views of a broader specimen.

Euomphalus calciferus, n. sp. Page 47.

Figs. 12 & 13. Views of two individuals, the latter restored over a part of the outer volution.

Murchisonia gracilens, n. sp. Page 53.

Figs. 14 & 15. Views of two different specimens, enlarged.

Murchisonia? confusa, n. sp. Page 54.

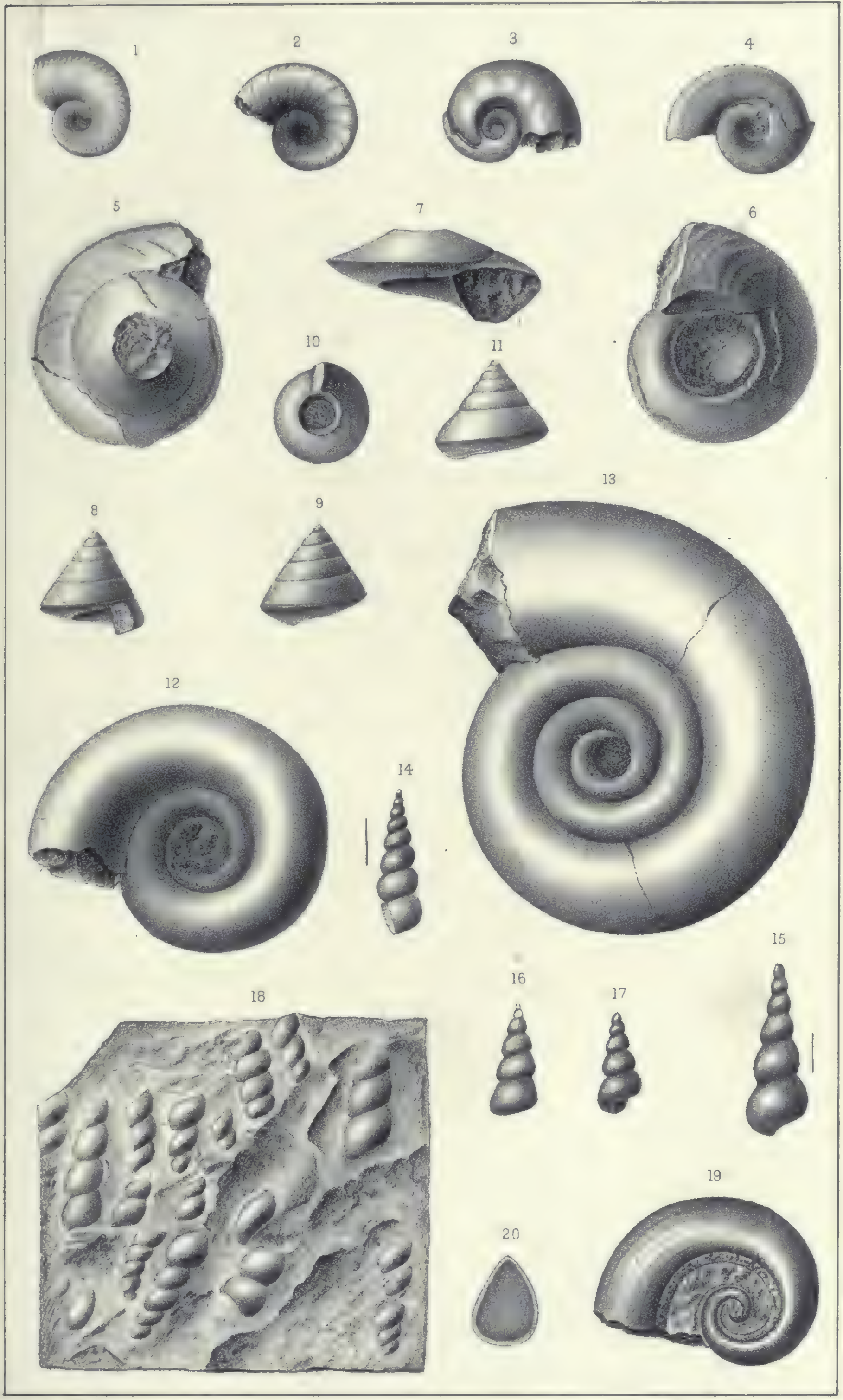
Figs. 16 & 17. Views of two individuals, natural size.
Fig. 18. View of a block of shaly limestone, showing their mode of occurrence.

Ecculiomphalus priscus, n. sp. Page 46.

Fig. 19. View of the under side of a cast; the thickness of the shell can be seen in the rock between the coils.
Fig. 20. Section, showing the form of the tube.

LAKE CHAMPLAIN FOSSILS.

Bulletin A.M.N.H. Vol. II, No. 2, Plate 8.


1
2
3
4
5
7
6
10
11
13
8
9
12
14
18
16
17
15
19
20

L.P.G. & R.P.W del.

Geo. S. Harris & Sons Lith. Phila.

EXPLANATION OF PLATE 9.

Trochonema exile, n. sp. Page 51.

Figs. 1 & 2. Two views of a cast, enlarged.

Holopea turgida, Hall's sp. Page 50.

Figs. 3 & 4. Lateral and vertical views of a small specimen.
Figs. 5 & 6. Similar views of a large, slightly imperfect specimen.
Fig. 7. Lateral view of a large specimen with imperfect spire.

Lophospira Calcifera, n. sp. Page 55.

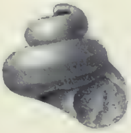
Figs. 8 & 9. Front and back views of a specimen, showing twisted columella.
Figs. 10 & 11. Similar views of a more slender, angular form.

Bucania tripla, n. sp. Page 55.

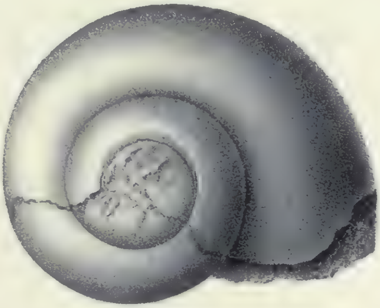
Figs. 12 & 13. Dorsal and apertural views of the largest specimen observed.

LAKE CHAMPLAIN FOSSILS.

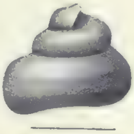
1



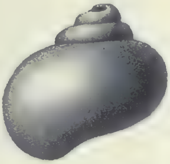
5



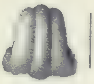
2



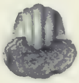
3



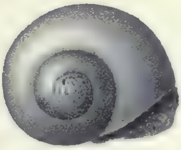
12



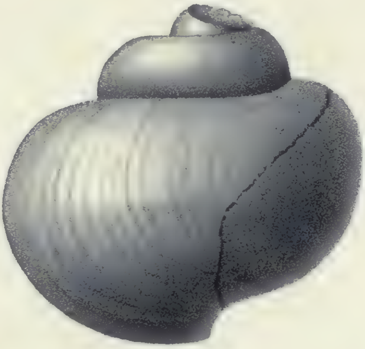
13



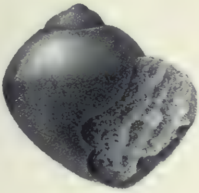
4



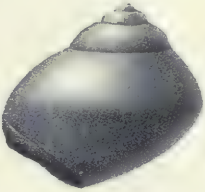
6



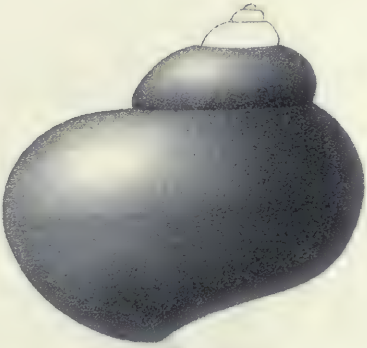
8



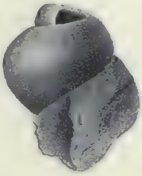
9



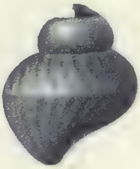
7



10



11



L.P.G. & R.P.W. del.

Geo. S. Harris & Sons Lith. Phila.

EXPLANATION OF PLATE 10.

Orthoceras primigenium, Hall. Page 56.

Fig. 1. View of a longitudinal section, showing septa in lower half.

Cyrtoceras Beekmanensis, n. sp. Page 57.

Figs. 2 & 3. Lateral and ventral views of a fragment, showing the septa and outer chamber.

Cyrtoceras Kirbyi, n. sp. Page 57.

Figs. 4 & 5. Dorsal and lateral views of a specimen, showing the form and proportions of the tube, also the siphon.

Fig. 6. The outer chamber separated, showing the depth of septum.

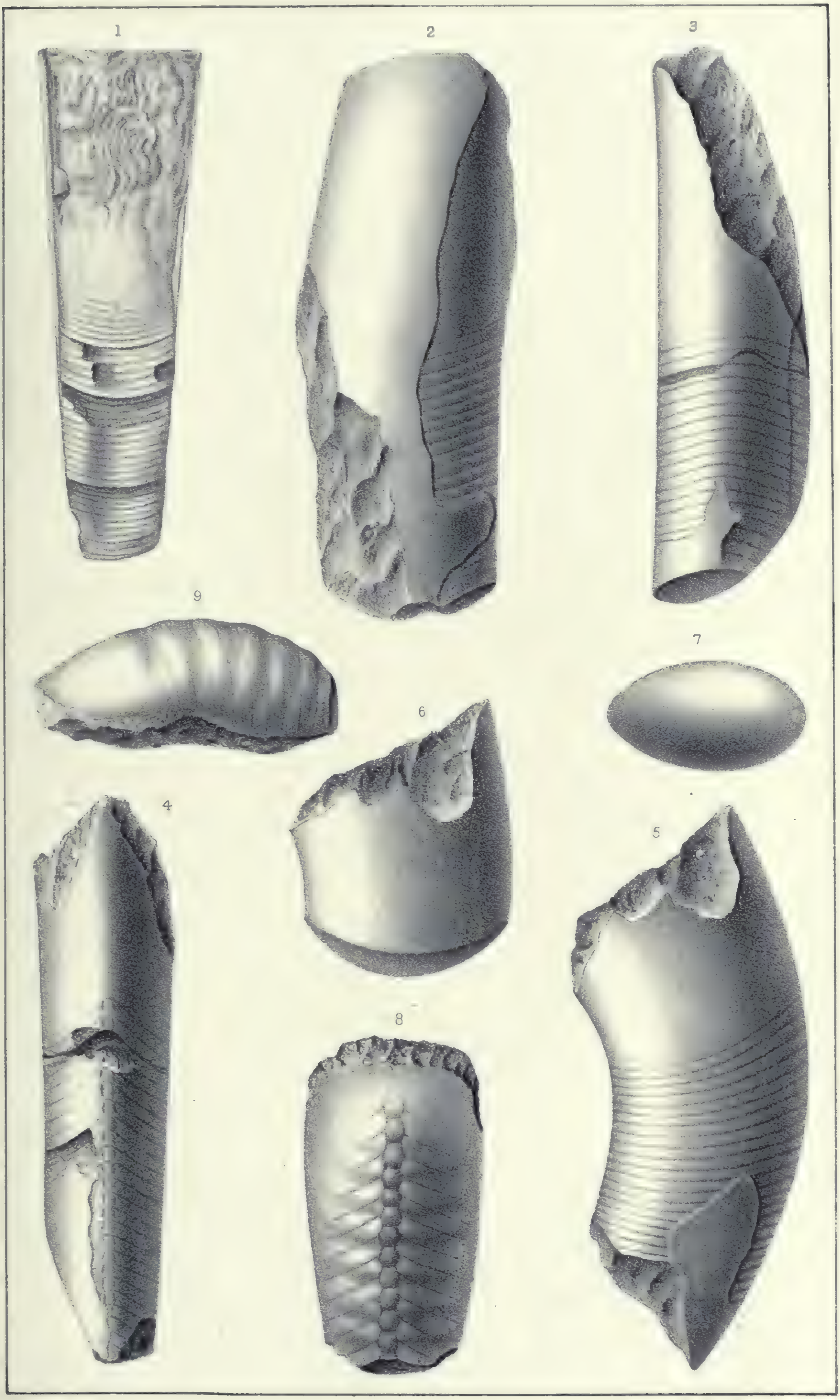
Fig. 7. Form of transverse section.

Cyrtoceras Raei, n. sp. Page 58.

Figs. 8 & 9. Back view, showing siphon, and lateral view of the fragment.

LAKE CHAMPLAIN FOSSILS.

Bulletin A.M.N.H. Vol. II, No. 2, Plate 10.



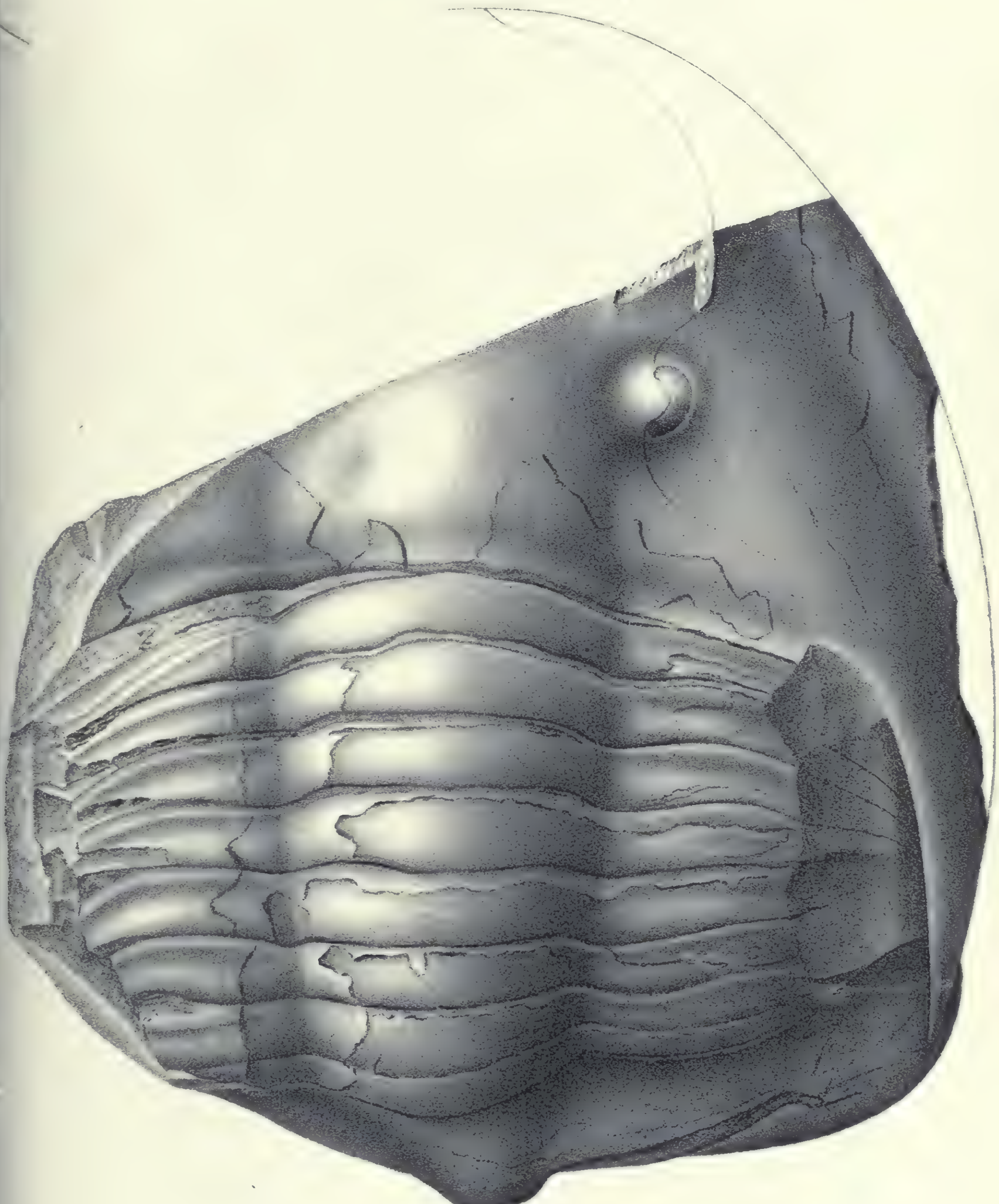
L P G del

Geo. S Harris & Sons Lith.

EXPLANATION OF PLATES 11 AND 12.

Asaphus canalis, Conrad. Page 64.

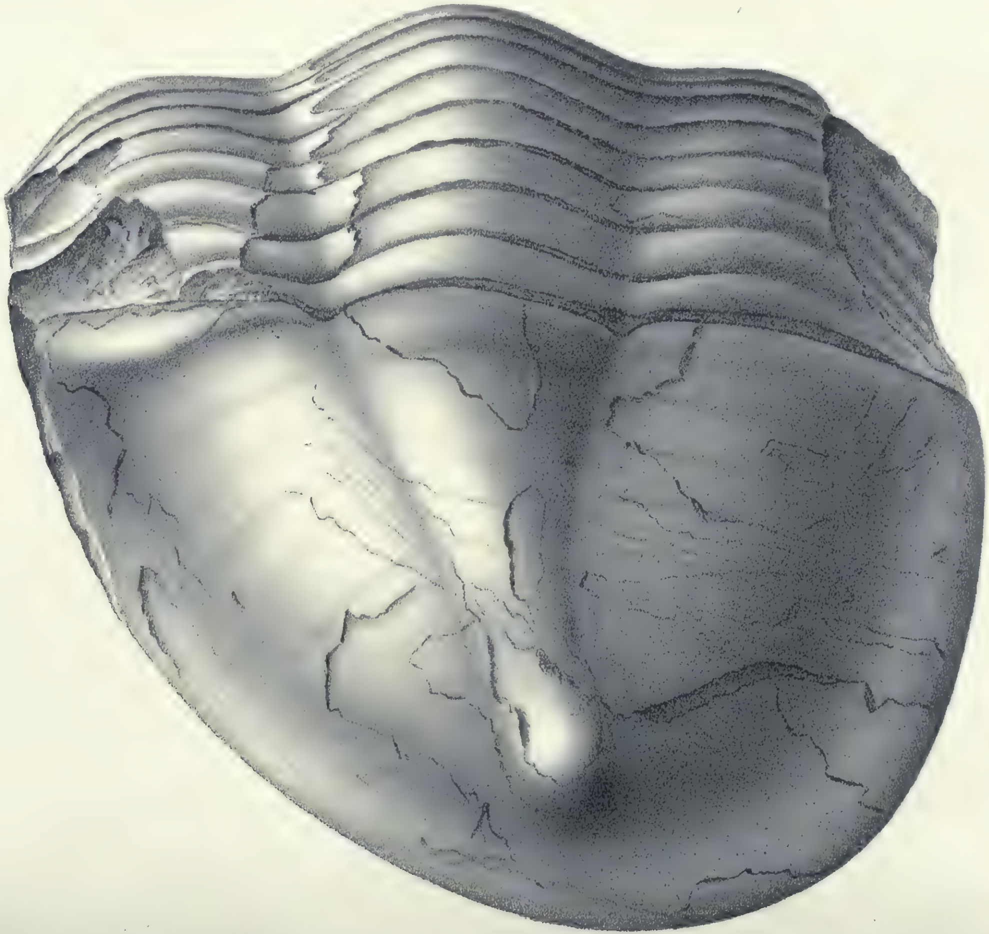
Plate 11 shows the head and thorax of a large specimen, and Plate 12 the pygidium and thorax of the same individual. In the latter view the cheek spine on the right, shown on Plate 11, is removed.



R.P.W. del.

Geo. S. Harris & Sons Lith. Phila.

LAKE CHAMPLAIN FOSSILS.



R.P.W. del. Geo. S. Harris & Sons Lith. Phila.

EXPLANATION OF PLATE 13.

Primitia cristata, n. sp. Page 59.

Figs. 1 & 2. Views of opposite valve (4 diameters) and an outline profile of each, showing elevation.

Primitia gregaria, n. sp. Page 58.

Figs. 3 & 4. View of opposite valves (4 diameters), with outline profiles.

Fig. 5. View of an internal cast of the same.

Primitia Seelyi, n. sp. Page 60.

Fig. 6. View of a right valve with profiles (4 diameters).

Fig. 7. Enlargement of crust, showing the pits with granules in them.

Bathyurus Seelyi, n. sp. Page 61.

Figs. 8 & 9. View of a glabella and fixed cheeks, the frontal rim imperfect. Also outline profile.

Fig. 10. View of a left movable cheek, imperfect below.

Figs. 11 & 12. Another imperfect head and outline profile.

Figs. 13 & 14. Pygidium, (2 diameters), the marginal rim partly removed.

Bathyurus conicus, Billings. Page 61.

Figs. 15 & 16. View of the central parts of the most perfect head, and profile in outline.

Figs. 17–19. View of imperfect heads of this species.

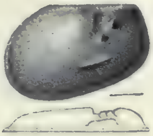
Figs. 20 & 21. Views of a pygidium, enlarged twice.

Protobalanus Hamiltonensis, Whitf. Page 67.

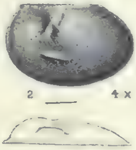
Fig. 22. View greatly enlarged, to scale, showing the features described.

LAKE CHAMPLAIN FOSSILS.

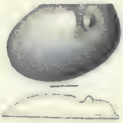
1



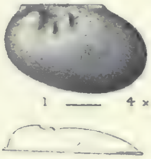
2



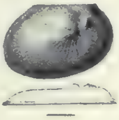
5



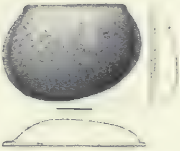
3



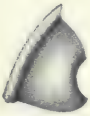
4



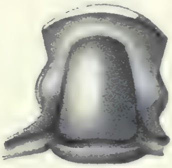
6



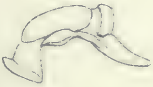
10



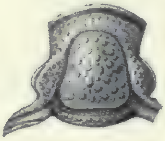
8



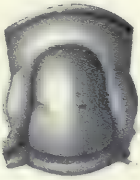
16



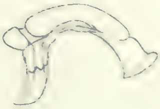
15



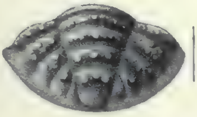
11



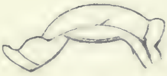
9



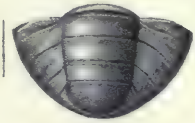
20



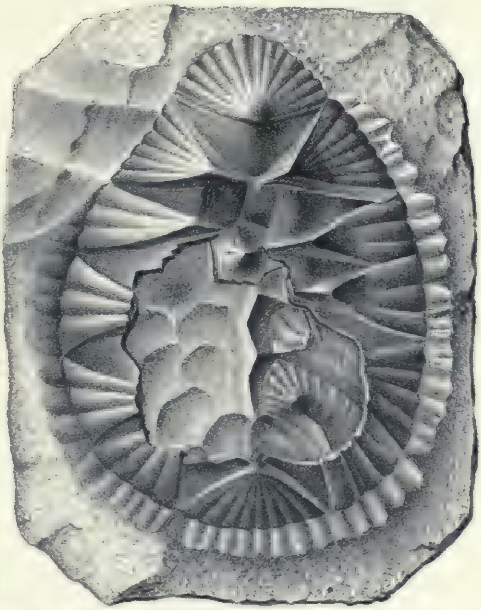
12



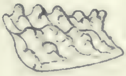
13



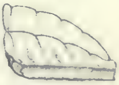
22



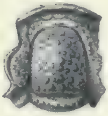
21



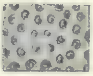
14



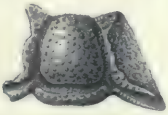
17



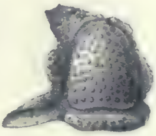
7



18



19



R.P.W. del. Geo. S Harris & Sons Lith. Phila

ARTICLE VI.—*Notes on a Collection of Birds from Quito, Ecuador.*

By J. A. ALLEN.

A small collection of birds, made in the immediate vicinity of Quito by Mr. L. Söderström, recently purchased by the American Museum of Natural History, contains several species of interest. The collection numbers 210 specimens, representing 79 species, one of which proved to be new,* while others are quite worthy of record.

1. **Thryophilus nigricapillus** *Scl.*—One specimen.

2. **Dendroica blackburniæ** (*Gm.*).—An immature male.

3. **Diglossa sittoides** (*d'Orb. et Lafr.*).—The single specimen (male) differs from a Bogota example in having the whole dorsal surface more bluish-gray, with less blackish on the front and sides of the head, and in wanting the small postocular white spot.

4. **Dacnis angelica** *De Filippi.*—Seven examples, all adult males.

5. **Dacnis egregia æquatorialis** *Berl.*—One specimen, differing markedly from Bogota skins in the more greenish tint of the blue color.

6. **Chlorophanes spiza cærulescens** (*Cass.*).

Chlorophanes spiza exsul BERL. et TACZ., P. Z. S., 1883, p. 543.

Of the five specimens in the collection three are typically referable to the blue form named by Cassin as above. The other two are referable to

7. **Chlorophanes spiza guatemalensis** (*Cass.*).—These skins are evidently of a different make from the others, and are no doubt from a different locality.

8. **Cœreba cærulea** (*Linn.*).—Three specimens—two males and one female—agree perfectly with Bogota examples, the bill being of nearly maximum length for this species.

9. **Procnias viridis** *Ill.*—Two specimens, male and female. The bird commonly hitherto called *Procnias tersa* (Linn.) presents a singular case as regards both its generic and specific names. As Count von Berlepsch has shown (Ibis, 1881, p. 243),

---

* See Auk, V, July, 1888, p. 287.

the description of *Ampelis tersa* Linn. (Syst. Nat., 12th ed., 1766, p. 298) does not apply to this bird, and until some bird is found which it properly characterizes the name must be considered as indeterminable.

The "*Hirundo viridis* Temminck Cat." of Illiger (Prod., 1811, p. 228) proves on examination to be merely a Latin translation of Temminck's "L'hirondelle verte" (Cat. syst. du Cab. d'Ornithologie et de Quadrumanes, 1807, p. 245, No. 986), which seems to be undoubtedly the female of the bird called *Procnias tersa* by later authors. *Hirundo viridis* must, however, date from Illiger, and the name for the species be *Procnias viridis* Ill., instead of *Procnias cærulea* (Vieill.),* as claimed by Count von Berlepsch (l. c.). This is unfortunate, as Vieillot described very carefully both sexes and the young, and figured the male.

"*Procnias ventralis* Ill., Prodr., p. 228," is often cited among the synonyms of this bird (*cf.* Sclater, Cat. Bds. Brit. Mus., XI, 1886, p. 50), but for what reason is hard to see, as this name does not exist in Illiger's 'Prodromus' at the page cited, nor elsewhere in the work, so far as I have been able to discover.

Illiger, in founding his genus *Procnias*, apparently attributes it to Hoffmansegg, but I am unable to find that Hoffmansegg ever published it. Illiger's diagnosis of *Procnias* is not strictly applicable to the bird since known as *Procnias*, much better agreeing with some of the Cotingidæ, two of which be cites under *Procnias*, thus formally referring them to this genus, as follows: "Species: Ampelis variegata, carunculata? *Lin. Gmel.* Hirundo viridis Temminck Catalog. (at nostra avis, cum descriptione bene eongruens, e Brasilia est.)." It is only through this reference to a bird described by Temminck, which is apparently the female of *Procnias tersa* auct. pl., that it is possible to bring *Procnias* Ill. into any relation with the species now under consideration. Evidently, as the context shows, Illiger made his genus *Procnias* for the Linn.-Gmelin species of *Ampelis* which he designed to remove from his restricted genus *Ampelis*, and were it not for the reference to Temminck, *Ampelis variegata* Gmelin would have to be considered as its type.

---

* *Tersina cærulea* Vieill., Nouv. Dict., XXXIII, 1819, p. 401, pl. xx, fig. 1.

With a large series of specimens of this species before me I am unable to recognize any basis for a "smaller subspecies *occidentalis*."

10. Euphonia xanthogastra *Sund.*—Four males (Napo, November) and one female (Gualea, July 14).

11. Euphonia saturata (*Cab.*).—Two males.

12. Chlorochrysa nitidissima *Scl.*—A single male from Napo.

13. Calliste yeni (*d'Orb. et Lafr.*).—Two males, Napo.

14. Calliste schrankii (*Spix*).—Four males and one female (Napo).

15. Calliste xanthogastra *Scl.*—One adult male, Napo.

16. Calliste rufigularis (*Scl.*).—An adult male, Nanegal, July 14.

17. Calliste gyroloides (*Lafr.*).—Adult male, Napo; young female, "near Quito."

18. Calliste cyaneicollis (*Lafr.*).—Adult male, near Quito.

19. Calliste cyanopygia *Scl.*—Adult male, Nanegal.

20. Calliste ruficervix (*Prév. et Des Murs*).—Three adult males (Gualea, July 14; Batonago, Aug. 25).

21. Calliste nigriviridis (*Lafr.*).—One adult male, Nanegal.

22. Calliste lunigera *Scl.*—Four adult males (Nanegal and Millegala, May).

23. Calliste aurulenta (*Lafr.*).—Three adults, "near Quito."

24. Iridiornis dubusia (*Bon.*).—Two adult males, "Nono, west of Quito."

25. Tanagra cœlestis *Spix.*—One specimen, Napo.

26. Piranga ardens *Tsch.*—Male, Nanegal.

27. Ramphocœlus nigrogularis (*Spix*).—Two males, Napo.

28. Ramphocœlus icteronotus *Bon.*—Eight males, Quito.

29. Trichothraupis quadricolor (*Vieill.*).—Eight examples; one, "Pichincha, May, 1883"; the others, "near Quito."

30. Tachyphonus cristatus (*Gm.*).—Adult male, Napo.

31. Buarremon assimilis (*Boiss.*).—One example, Nono, near Quito.

32. Arremon spectabilis *Scl.*—One example, Napo.

33. Psittospiza riefferi (*Boiss.*).—Male, Quito, November.

34. Pheuticus chrysogaster (*Less.*). — Adult male, Quito. Marked "Resident the whole year."

35. Habia ludoviciana (*Linn.*).—A young male, "Callipalli, foot of Pichincha, alt. 10,000 ft." This bird is considered very rare by the collector, Mr. Söderström, who says this specimen is the only one he ever met with.

36. Spermophila homochroa (*Scl.*). — Two examples, male and female.

37. Catamblyrhynchus diadema *Lafr.*—Adult male, Nanegal, April, 1883. "Rare."

38. Cassicus persicus (*Linn.*).—Male, Napo.

39. Cassicus uropygialis *Lafr.*—Male.

40. Icterus croconotus (*Wagl.*).—Male, Napo.

41. Todirostrum ruficeps *Scl.*—One specimen, Napo.

42. Myiozetetes granadensis *Lawr.*—One example, Quito.

43. Pyrocephalus rubineus (*Bodd.*).—One example, "Quito, May 25th, 1885."

44. Myiobius pulcher *Scl.*—One example, Quito.

45. Masius coronulatus *Scl.*—Two males, Nanegal, June and May.

46. Pipra* filicauda (*Spix*).—Two males and a female, Napo.

47. Pipra cyaneocapilla *Hahn.*—Twenty-eight males and two females, Napo.

48. Pipra auricapilla *Licht.*—Twenty-five males, Napo. The yellow of the head is rather paler than in specimens from Eastern Brazil, Cayenne, and Trinidad, with less red tipping the posterior border of the yellow hood. In a number of specimens it is entirely absent, and is generally only slightly indicated; in only two or three is it as well developed as in eastern birds.

49. Chiroxiphia pareola (*Linn.*). — Three males and one female, Napo.

---

*Genus **Pipra** Linn.

Pipra Linn., Mus. Adolph. Fred., II, 1764, p. 32. Type *Parus aureola* Linn., Syst. Nat., ed. 10, 1758, p. 191.

Genus **Manacus** Brisson.

Manacus Brisson, Orn., IV, 1760, p. 442. Type *Pipra manacus* Linn., Syst. Nat., ed. 12, 1766, p. 340 (ex Edwards and Brisson).

Chiromachæris Cabanis, Wiegm. Arch., 1847, p. 235. Type *Pipra manacus* Linn.

No one accepting Brissonian genera can reject *Manacus* for the species Cabanis in 1846 made the type of his genus *Chiromachæris*.

50. Manacus manacus (*Linn.*).

Pipra manacus Linn., Syst. Nat., ed. 12, 1766, p. 340.

Chiromachæris manacus Cab., et auct. pl. recent.

Male and female, Napo.

51. Machæropterus striolatus (*Bon.*).—Four males and two females, Napo.

52. Machæropterus deliciosus *Scl.* — Four males, Nanegal, Feb. 20, 1882.

53. Tityra personata *Jard. et Selby.* — Two examples, San Miguel, November, 1881 (altitude 4000 feet), and Napo. One has much more and the other less white than usual in the tail. (See Auk, V, 1888, p. 287.)

54. Tityra albitorques *Dubus.*—The single example, from Napo, has less white than usual on the inner vanes of the tail-feathers at the base. (See Auk, V, 1888, p. 287.)

55. Tityra nigriceps *Allen.*

Tityra nigriceps Allen, Auk, V, 1888, p. 287.

One example, Napo.

The four specimens of *Tityra* in the collection have already been made the subject of remark (Auk, l. c.), each presenting peculiarities, and one of them differing so radically from any previously recognized form as to be deemed worthy of a name. Having had in hand in this connection a large amount of material, I submit the following as the result of my conclusions.

Synopsis of the Species and Subspecies of the Genus Tityra.

A. Loral region naked. (*Tityra.*)
  a. Entire head and chin black; tail black.
    a^1. Bill red, tip black.................................*1. T. cayana.*
    a^2. Bill black, reddish at the extreme base...*1a. T. c. brasiliensis.*

b. Front of head, chin, malar region, and anterior portion of auriculars black; tail white with a broad subterminal bar of black.

  b^1. Black of tail crossing both vanes of all the rectrices. *2. T. personata.*

  b^2. Black of tail interrupted or wanting on outer rectrices. *2a. T. p. semifasciata..*

  b^3. Males similar to males of *T. personata;* females with the front of the head grayish, lighter than nape and back. *2b. T. p. griseiceps.**

c. Entire head and throat black, tail black, narrowly tipped with white, and with a little concealed white at the base.......*3. T. nigriceps.*

B. Loral region feathered. (*Erator.*)

a. Entire head, including ear-coverts and malar region, black; tail black, white at extreme base........................*4. T. inquisitrix.*

b. Whole top of head and lores black; no black below the eye, nor on the auriculars; tail white, crossed near the end by a broad band of black....................................*5. T. albitorques.*

I am unable to find any characters by which *T. fraseri* Kaup can be separated even subspecifically from *T. albitorques* Spix.

56. Rupicola sanguinolenta *Gould.*—Male and female, Milligalli (female, Aug., 1878; male, Dec., 1883).

57. Phœnicircus nigricollis *Sw.*—Male, Napo.

58. Pipreola sclateri *Corn.*—Male, Rio Napo.

59. Ampelion arcuatus *Lafr.*—Male and female, near Quito, Oct., 1886.

60. Cotinga mayana (*Linn.*).—Male, Napo.

61. Cephalopterus penduliger *Scl.*—Represented in the collection by a pectoral tuft 13 inches in length.

62. Cymbilanius lineatus (*Leach*).—Male and female, Napo.

63. Pithys peruvianus (*Tacz.*).

Pithys albifrons Tacz., P. Z. S., 1874, p. 531.

Pithys albifrons, peruvianus Tacz., Orn. Pér., II, 1884, p. 73.

Eight examples in the Söderström Collection from Napo, one from Quito (ex E. N. Brigham), and one in the Lawrence Collection without locality, all agree with Taczanowski's description of the Peruvian form, which he has designated as above. The characters separating this form from the true *P. albifrons* from Cayenne and Brazil are apparently of specific value. As Taczanowski has pointed out, they are the entire absence of the white postocular stripe, the shorter, narrower and less abundant plumes forming the lateral crests, with a broader and more pronounced black gorget on the throat, and the extension of the black of the head in the form of a broad band to the base of the bill, instead of the forehead being wholly covered by the white plumes. Also by the shorter inner and posterior plumes of the sides of the head being black instead of white. In size and in general coloration the two forms appear to differ little, except that the Ecuadorian birds have the brown everywhere a little deeper in tone.

---

* *Tityra personata griseiceps* Ridgw., Auk, V, 1888, p. 263. Hab. Western Mexico.

64. Leptasthenura andicola *Scl.*—One specimen, Antisana.

65. Synallaxis flammulata *Jard.*—One specimen, near Quito, July 14, 1886.

66. Grallaria rufula *Lafr.*—One specimen, Rio Napo.

67. Galbula albirostris chalcocephala (*Deville*).

Galbula chalcocephala Deville, Rev. et Mag. Zool., 2^e sér., I, 1849, p. 55.

Male, Napo.

The single specimen in the collection differs from Cayenne examples as noted by Sclater (Mon. Galb. and Buc., p. 28) in birds from the Rio Negro, and by Taczanowski (Orn. Pér., III, 1886, p. 116) in Peruvian specimens, all of which seem referable to Deville's *Galbula chalcocephala* (l. c.), which name may be employed to designate this fairly marked Andean and West Brazilian race.

68. Galbula chalcothorax *Scl.*—Three males and two females, Rio Napo.

69. Trogon viridis *Linn.* — Three males and one female, "near Quito, Nov., 1881."

70. Trogon ramonianus *Deville et Des Murs.* — Male, Rio Napo.

71. Pharomacrus antisiensis (*d'Orb.*). — An adult male, Pirca.

72. Pharomacrus pavoninus (*Spix*).—Male, Milligalli, Dec., 1887.

73. Bucco macrodactylus (*Spix*).—One example, Napo.

74. Rhamphastos tocard *Vieill.*—One specimen.

75. Andigena laminirostris *Gould.*—Male, near Quito, Aug., 1885.

76. Capito bourcieri (*Lafr.*)—Male and female, Rio Napo.

77. Capito richardsoni *Gray.*—Three females, Rio Napo.

78. Tetragonops rhamphastinus *Jard.* — Male, Milligalli (alt. 6000 feet), July, 1879.

79. Columbigallina passerina (*Linn.*)—Male, Quito, Aug., 1887.

ARTICLE VII.—*List of the Birds collected in Bolivia by Dr. H. H. Rusby, with Field Notes by the Collector.* By J. A. ALLEN.

During the years 1885 and 1886 Dr. H. H. Rusby, the well-known botanist, made a journey diagonally across Northern Bolivia, starting at Arica in Chile and proceeding thence north-eastward to the headwaters of the Rio Madeira, and then down this river to the northern border of Bolivia. Dr. Rusby's interests were, of course, primarily botanical, but, appreciating the fact that the region was comparatively little known zoölogically as well as botanically, he made, so far as his opportunities permitted, collections in other departments of natural history. His collection of birds, numbering about 400 specimens, and representing 267 species, was purchased by the American Museum of Natural History, and proves of special interest, adding as it does about 125 species to the list of previously known Bolivian birds, and 13 apparently new to science.

Dr. Rusby spent a few weeks also in the vicinity of Valparaiso, and made a short stay at Lake Titicaca, at each of which points a few birds were obtained, but by far the greater part of the collection was made in the Bolivian Province of Yungas, in a comparatively new field.

In working up the collection I have received important assistance from Mr. Robert Ridgway, the accomplished Curator of Birds at the U. S. National Museum, who not only assisted me in comparing some of the obscure forms with allied species in the National Museum, but secured for me the loan of important material for use in working up the collection. My thanks are also due to Mr. William Brewster of Cambridge for kindly securing the transmittal to New York of all the unmounted specimens, several hundred in number, of the families Dendrocolaptidæ, Formicariidæ, and Pteroptochidæ, belonging to the Cambridge Museum of Comparative Zoölogy; and to Mr. Charles B. Cory of Boston for securing to me the loan of all of the Lafresnaye types of these same families, from the Museum of the Boston Society of Natural History, the officers of the Society kindly allowing them to be sent to New York. With these accessions, added to the Lawrence, Maximilian, Verreaux and Smith Collections of this Museum, have placed me in command of more material relating to these difficult families than often falls under the eye of a single worker at one time, and has greatly facilitated my work and increased the value of its results.

The Valparaiso and Lake Titicaca species are included as a part of the general list of the collection, but as the localities are always stated it will not lead to any confusion as to the geographical origin of the specimens recorded.

Dr. Rusby's interesting field-notes are given in brackets, and are followed by the initial 'R.'

1. Turdus gigas *Fraser.* — One specimen, Yungas, Bolivia, Sept., 1885.

[In habits, flight, and especially in notes, similar to our own Robin (*Merula migratoria*).—R.]

2. Turdus phæopygus *Cab.*—One specimen, Falls of the Madeira, Oct., 1886.

[This and the next species are often found in company, along roads through dense forests, but in the vicinity of cleared land.—R.]

3. Turdus gymnophthalmus *Cab.*—One specimen, Yungas, Sept., 1885.

4. Turdus fumigatus hauxwellii (*Lawr.*). — Two, one an adult without label,* the other a young bird in fresh plumage, from Reyes, June, 1886.

[Frequents open ground; preferring low bushes in or bordering prairies rather than the forests.—R.]

5. Mimus thenca (*Mol.*). — Two examples, one Valparaiso, June, 1885, the other Lower Beni River, Aug., 1886.

[I did not learn that it has the power of mimicry, displayed by some other species of the genus.—R.]

6. Campylorhynchus hypostictus (*Gould*). — Two specimens, one Lower Beni, July, 1888, the other Falls of the Madeira, Oct., 1886.

---

* In a few instances the collector's field labels had become detached and lost before the specimens were received at the Museum.

7. Microcerculus bicolor (*Des Murs*). — One specimen, Yungas.

[Found in the densest underbrush, where there is much decaying vegetable matter.—R.]

8. Thryophilus guarayanus (*Lafr. et d'Orb.*).—One specimen, Yungas.

9. Thryothorus mysticalis *Scl.*—One specimen, Mapiri, Bolivia, April, 1886.

[Found in dark thickets along streams, running over logs and flitting near the ground, much like the Ant-Thrushes.—R.]

10. Thryothorus genibarbis *Sw.*—One specimen, Falls of the Madeira, Oct., 1886.

11. Troglodytes musculus *Naum.*—One specimen, Mapiri, April, 1885. Another, in bad condition and without locality, is doubtfully referred to the same species.

12. Troglodytes solsticialis frater *Sharpe.*—One specimen, Mapiri, April, 1886.

13. Compsothlypis pitiayuma (*Vieill.*).—One specimen, apparently a female, Reyes, June, 1886.

14. Basileuterus leuteoviridis (*Bon.*). — One specimen, Yungas.

15. Basileuterus tristriatus (*Tsch.*).—Three examples, one Mapiri, April, 1886; two without locality.

16. Setophaga melanocephala *Tsch.*—One, no locality.

17. Granatellus pelzelni *Scl.*—Male, Falls of the Madeira, Oct., 1886.

18. Vireo chivi (*Vieill.*).—Two specimens, Mapiri, April, 1885.

19. Tachycineta meyeni (*Bon.*).—Male, Falls of the Madeira, Oct., 1886.

[This is more a river Swallow than the next, frequenting the vicinity of streams.—R.]

20. Tachycineta albiventris (*Bodd.*).—Male, Reyes, June, 1886.

[Common about houses.—R.]

21. Atticora cyanoleuca montana *Baird.*—Adult, near Valparaiso, Chile, June, 1885. Seems distinctly referable to Baird's var. *montana* (Rev. Am. Bds., 1885, p. 310). Compared with Brazilian specimens the tail is more deeply forked, the size larger, and the metalic reflection greenish—nearly as in *Tachycineta albiventris*—instead of steel blue.

[Common in the vicinity of rivers.—R.]

22. Conirostrum cyaneum *Tacz.*—One specimen, Yungas, April, 1885.

23. Dacnis cayana (*Linn.*).—Two males and two females, Mapiri, April, 1885; one male, Falls of the Madeira, Oct., 1886.

[Common from 2500 to 5000 feet, associating with the next, and various species of *Calliste.*—R.]

24. Dacnis angelica *De Filippi.*—Male, Mapiri, April, 1886; male, Falls of the Madeira, Oct., 1886.

25. Chlorophanes spiza cærulescens (*Cass.*).—Male, Falls of the Madeira, Oct., 1886.

[This species and the following are common in the low country, and have similar habits.—R.]

26. Cœreba cærulea (*Linn.*).—Two males, Falls of the Madeira, Oct., 1886; female, Mapiri, April, 1886. These birds have the bill very short and slender, shorter and smaller even than Bogota specimens in the Lawrence Collection labelled *Cœreba cærula microrhyncha* by Berlepsch, from whom they were received by Mr. Lawrence. The difference in the size of the bill between these specimens and others from Cayenne is very considerable, but other specimens from the Rio Napo are intermediate. The two males in the Rusby Collection (Falls of the Madeira) have the culmen 13.5 m. (.54 in.); four Bogota males average 14.5 m. (.58 in.); four Rio Napo males, 16 m. (.62 in.); two Cayenne males measure respectively 15 m. (.60 in.) and 16 m. (.63 in.). A Bolivian (Mapiri) female has the culmen 14 m. (.56 in.); two Bogota females, 15 m. (.60 in.); a Napo female, 16 m. (.64 in.); and a Cayenne female, 15.5 m. (.63 in.).

27. Procnias viridis *Ill.**—Female, Falls of the Madeira, Oct., 1886.

[Common, ranging from 2500 to 5000 feet.—R.]

---

* See antea, pp. 69, 70.

28. Certhiola chloropyga *Cab.*—Three specimens, Mapiri, April, 1886.

[Common from 2500 to 5000 feet, associating with various species of *Dacnis* and *Calliste*.—R.]

29. Euphonia laniirostris *Lafr. et d'Orb.*—Two males and two females, Fall of the Madeira, Oct., 1886.

These specimens differ from several Bogota specimens (*E. crassirostris* Scl.) in having the bill much smaller, the yellow of the cap much deeper (orange yellow), and the lower surface deep dull orange instead of bright yellow, or nearly as in *E. xanthogastra*. The basal patch on the inner webs of the wing-feathers is much broader and better defined, and the white much purer. The white on the tail is confined to the outer feather alone on each side, and is smaller in extent, about equalling the white area on the *second* feather in *E. crassirostris*. The two forms, judging from the material before me, are specifically distinct. (*Cf.* Sclater, Cat. Bds. Brit. Mus., XI, 1886, p. 77.)

30. Calliste yeni (*Lafr.*).—Male, Mapiri, April, 1886.

[This species, with the other species of *Calliste* and *Dacnis*, associate in small companies, feeding in loose flocks of 50 to 100 individuals, and are particularly fond of hunting for ants and other insects in the *Cecropia* and mulberry trees. They are more or less common from 2500 to 5000 feet.—R.]

31. Calliste gyroloides (*Lafr. et d'Orb.*). — Male, Mapiri, April, 1886.

32. Calliste xanthogastra *Bon.*—Male, Mapiri, April, 1886.

33. Calliste boliviana *Bon.*—Male, Yungas, Sept., 1885.

34. Calliste nigricincta (*Bon.*).—Three specimens, Mapiri, April, 1886.

35. Compsocoma flavinucha (*Lafr. et d'Orb.*).—One specimen, Yungas, Sept., 1885.

[Inhabits dense forests, associating in small flocks.—R.]

36. Tanagra episcopus leucoptera (*Gray*).—One specimen, Yungas, Sept., 1885.

[Inhabits open hill-sides, especially coca plantations, visiting the flowering pacay trees (*Inga*).—R.]

37. Tanagra cyanoptera (*Vieill.*).—Two specimens, Yungas, April, 1888; one specimen, Lower Beni, Aug. 8, 1886.

[Resembles the preceding in habits, but inhabits a region of lower altitude.—R.]

38. Tanagra palmarum *Wied.*—Three specimens, Mapiri, April, 1886.

[Similar to the last in general habits. At night they assemble in flocks of apparently thousands in some large, solitary, densely leafy tree.—R.]

39. Ramphocelus atrosericeus *Lafr. et d'Orb.*—Three adult males, three immature males, and one female, Mapiri, April, 1886; one female each from Falls of the Madeira (Oct., 1886), Reyes (June, 1886), and Beni River (July, 1886).

[A very common bird, frequenting trees densely covered with vines, and on this account difficult to shoot and more difficult to find when killed. The brightness of the plumage fades somewhat soon after death. The base of the lower mandible is bright ivory white in life.—R.]

40. Lanio versicolor (*Lafr. et d'Orb.*).—Male, Lower Beni, Aug., 1886.

41. Tachyphonus luctuosus *Lafr. et d'Orb.*—Male, Reyes, June, 1886.

42. Cypsnagra ruficollis (*Licht.*).—One specimen, Yungas, Sept., 1885.

43. Nemosia flavicollis *Vieill.*—Male, Yungas, Sept., 1886.

44. Nemosia guira (*Linn.*).—Male and female, Mapiri, April, 1886.

45. Chlorospingus albitempora (*Lafr.*).—One specimen, no locality.

46. Saltator superciliaris (*Spix*).—One specimen, Falls of the Madeira, Oct., 1886.

47. Saltator magnus (*Gm.*).—One specimen, Yungas, Sept., 1886.

48. Saltator laticlavius *Scl. et Salv.*—A bird of the year, "near Valparaiso, June, 1885."

49. Cissopis leveriana (*Gm.*).—One specimen, Lower Beni, Aug., 1886.

[Found in dense swampy thickets, and flits slowly near the ground.—R.]

50. Schistochlamys atra (*Gm.*). — Two males, Valparaiso, June, 1885; two males, Mapiri, April, 1886; one female, Reyes, June, 1886, and one female without locality.

51. Pitylus grossus (*Linn.*).—Male, Mapiri, April, 1886.

52. Pheuticus aureiventris (*Lafr. et d'Orb.*).—Male, Mapiri, April, 1886.

53. Guiraca cyanea (*Linn.*).—Female, Lower Beni, Aug., 1886.

54. Sporophila castaneiventris (*Cab.*).—Male, Falls of the Madeira, Oct., 1886.

55. Sporophila lineola (*Linn.*).—Male, Falls of the Madeira, Oct., 1886; female, no locality.

56. Sporophila cærulescens (*Bon. et Vieill.*).—Male, Lower Beni, Aug., 1886.

57. Volatina jacarina (*Linn.*).—Male, without locality. Lining of wing white.

58. Spinus barbata (*Mol.*).—Male, young male, and female, near Valparaiso, June, 1885.

59. Sycalis pelzelni *Scl.*—Male, Reyes, June, 1886.

[Seems to prefer clumps of bushes near prairies.—R.]

60. Zonotrichia pileata (*Bodd.*).—Two specimens, Valparaiso and La Paz, Bolivia.

61. Ammodramus manimbe (*Licht.*).—One specimen, Falls of the Madeira.

62. Pseudochloris lutea (*Lafr. et d'Orb.*).—Male, near Valparaiso, June, 1885.

63. Phrygilus fruticeti (*Kittl.*). — Male, near Valparaiso, June, 1885.

64. Phrygilus alaudinus (*Kittl.*). — Male, near Valparaiso, June, 1885.

65. Phrygilus aldunatii punensis (*Ridgw.*). — Male, near Valparaiso, June, 1885.

66. Diuca diuca (*Mol.*).—Two males and a female, labelled respectively "near Valparaiso?, June, 1886," "Reyes?, June, 1886," and "Mapiri, April, 1886."

67. Paroaria cucullata (*Lath.*).—Male, Trinidad, Bolivia.

68. Paroaria gularis cervicalis (*Scl.*).—Two specimens, Falls of the Madeira and Reyes.

[Seen only along streams, thickly overhung with bushes.—R.]

As Mr. Sharp has implied (Cat. Bds. Brit. Mus., XII, 1888, p. 814, footnote), *P. cervicalis* is doubtless only a local form of *P. gularis*. The only character which appears to separate *P. cervicalis* from *P. capitata* seems to be the wholly yellow bill of the latter, judging from quite a series of Matto Grosso specimens in the Smith Collection. It is probable that both *P. capitata* and *P. cervicalis* are only subspecies of *P. gularis.*

69. Gymnostinops yuracares (*Lafr. et d'Orb.*).—Male, Lower Beni, Aug., 1886.

70. Ostinops decumanus (*Pall.*).—Male, Lower Beni, Aug., 1886.

71. Ostinops atrovirens (*Lafr. et d'Orb.*).—One male and three females, Yungas, Sept., 1885.

[Builds a long hanging nest in solitary trees, breeding in colonies. Have seen forty to fifty nests in a single tree.—R.]

72. Cassicus persicus (*Linn.*).—Male, Lower Beni, Aug., 1886.

[Nests in large colonies in isolated trees.—R.]

73. Dolichonyx oryzivorus (*Linn.*).—Female, Falls of the Madeira, Oct., 1886.

74. Agelaius thilius (*Mol.*).—Male, Valparaiso, June, 1885.

75. Curæus aterrimus (*Mol.*).—Male, Valparaiso, June, 1885.

[Inhabits swampy grounds. Habits similar to those of our Grackles.—R.]

76. Trupialis militaris (*Linn.*).—Male, Valparaiso, June, 1885.

[Regarded with affection by the people of Chile, much as the Robin is with us.—R.]

77. Icterus croconotus (*Wagl.*). — Falls of the Madeira, female ?.

[This or a closely allied species, was noted as a very sweet singer.—R.

78. Cyanocorax chilensis (*Bon.*).—Two specimens, Yungas. [Said to feed on carrion.—R.]

79. Xanthoura yncas (*Bodd.*).—One specimen, Yungas.

80. Tænioptera velata *Licht.*—One specimen, Lake Titicaca.

81. Tænioptera irupero (*Vieill.*).—One specimen, Valparaiso.

82. Ochthornis murina (*Pelz.*).—One immature specimen, Falls of the Madeira. Doubtfully referred to this species.

83. Ochthœca thoracica *Tacz.*—One specimen, no locality.

84. Sayornis cineracea (*Lafr.*).—Two specimens, no labels.

85. Arundinicola leucocephala (*Linn.*).—Reyes, one specimen.

[Has the habit of sitting on dead bushes in or near water, to watch for passing insects.—R.]

86. Copurus colonus (*Vieill.*).—Male, Lower Beni, August.

87. Machetornis rixosa (*Vieill.*).—Yungas, one specimen.

88. Muscisaxicola rufivertex *Lafr. et d'Orb.*—Valparaiso, one specimen.

89. Platyrhynchus coronatus *Scl.*—Falls of the Madeira, one specimen.

90. Todirostrum chrysocrotaphum (*Strickl.*).—Falls of the Madeira, one specimen.

91. Anæretes parulus (*Kittl.*).—Valparaiso, four specimens.

92. Cyanotis azaræ (*Naum.*).—Valparaiso, one specimen.

93. Leptopogon superciliaris (*Tsch.*).—Yungas, one specimen. Doubtfully referred to this species.

94. Ornithion inerme *Hartl.*—One specimen, no locality.

95. Rhynchocyclus sulphurescens (*Spix*). — Mapiri, one specimen.

96. Pitangus bolivianus *Lafr. et d'Orb.*—Reyes (?), one specimen.

97. Hirundinea bellicosa (*Vieill.*).—One specimen, without locality.

98. Myiobius cinnamomeus (*Lafr. et d'Orb.*).—Three specimens—Mapiri, Falls of the Madeira, and one (juv.) without locality.

99. Pyrocephalus rubineus (*Bodd.*).—Reyes, three specimens; Falls of the Madeira, one specimen.

[Called "Higo del Sul" (Son of the Sun) by the people.—R.]

100. Empidonax bolivianus, sp. nov.

Similar to *E. brunneus* Ridgw., but much smaller; above olivaceous instead of umber brown; under wing-coverts greenish white instead of buffy; wing more rounded and inner secondaries relatively shorter.

Above dark olivaceous, the head darker, and the upper tail-coverts and tail browner, contrasting with the back. Wings dusky, the primaries (first broadly) edged externally with fulvous, the secondaries broadly edged with pale buff, fading to yellowish white on the inner secondaries; median and greater wing-coverts broadly tipped with fulvous, forming two conspicuous wing-bars; lesser coverts like the back; basal portions of inner webs of the remiges ochraceous, more broadly so and the area more extended on the secondaries; bend of wing greenish buff; inner wing-coverts and axillaries greenish white. Lores grayish white, tinged with olive. Chin and middle of throat grayish white, shading into the dark olive of the sides of head and neck; a well-marked pectoral band of dark greenish brown; middle of belly light sulphury yellow, fading into yellowish white on middle of abdomen; lower tail-coverts pale sulphur yellow; flanks dark olivaceous. Tail dusky brown, the outer vanes pale rufous brown, like the upper tail-coverts. Bill black above, rather clear white below. Tarsi and feet pale brown. Wing rounded, third, fourth, and fifth primaries longest and subequal; first shorter than the sixth. Tail slightly rounded, a little shorter than the wing. Bill broad, depressed, triangular, sides straight. Length (skin), 130 m. (5 in.);

wing, 62 m. (2.45 in.); tail, 56 m. (2.25 in.); tarsus, 13 m. (.48 in.); middle toe with claw equal to the tarsus; exposed culmen 11 m. (.47 in.); width of bill at base, 8 m. (.16 in.).

Type, No. 36,072, Am. Mus. Nat. Hist. *Habitat*, Bolivia, (Yungas?).

In the character of the wing markings, light under mandible, and short tarsi, this species is a miniature of *E. brunneus* Ridgw., but is easily distinguished from it by the smaller size and the olivaceous, not umber brown, of the upper parts. In a series of 13 examples of *E. brunneus* from Chapada, Matto Grosso (Smith Collection), only one approaches the small size of *E. bolivianus*, the wing averaging about 10 m. longer.

The single specimen in the Rusby Collection is from Bolivia, but owing to the loss of the original label the exact locality is not determinable.

101. Contopus ardesiacus (*Lafr.*.).—Mapiri, two specimens.

102. Myiarchus tyranninus (*Müll.*).—Mapiri, two specimens.

103. Tyrannus melancholicus *Vieill.*—Four specimens: Yungas, Reyes, and Falls of the Madeira.

104. Milvulus tyrannus (*Linn.*).—Falls of the Madeira; two specimens.

[Often seen in small flocks, near streams. A very strong, active bird.—R.]

105. Chiroxiphia pareola boliviana, subsp. nov.

Similar to *C. pareola*, but with the crest darker, narrower, and less full; blue of the back darker and deeper, and the black of the general plumage more intense; wings shorter and general size smaller. The black of the forehead extends back about one-third further, and forms a much broader band along the sides of the pileum, restricting the crown patch to about half the area it occupies in Brazilian specimens. (*Cf.* SCLATER and SALVIN, P. Z. S., 1879, 617.) Judging by the single specimen (adult male) in the Rusby Collection, from Yungas, the Brazilian form is well entitled to subspecific recognition.

106. Pipra fasciata *Lafr.*—Male, Falls of the Madeira.

107. Tityra semifasciata (*Lafr. et d'Orb.*).—Male, Falls of the Madeira; female, Reyes.

108. Pachyrhamphus niger *Spix.*—Male, Lower Beni River. This specimen is much blacker below, with less white on the scapulars, wings, and tail, than in Brazilian and Cayenne birds, it agreeing very closely with "le mâle unique d'Yurimanguas" described by Taczanowski (Orn. Pér., II, p. 364).

109. Pachyrhamphus rufescens *Spix.*—One specimen, La Paz.

110. Lathria plumbea (*Licht.*).—Three specimens, Mapiri, April, 1886.

This is probably the *Lathria plumbea* of authors, if distinct from *L. cinerea*. The wing, however, varies in length in the three Mapiri specimens from 94 m. (4.70 in.) to 130 m. (5.10 in.), the range in size thus covering both *L. plumbea* and *L. cinerea*.

111. Cotinga cayana (*Linn.*).—Lower Beni, August.

112. Gymnoderus fœtidus (*Linn.*).—One specimen, Lower Beni, August.

113. Phytotoma rara *Mol.*—Mapiri, one specimen.

114. Phytotoma raimondii *Tacz.*—Valparaiso, one specimen.

115. Geositta cunicularia (*Vieill.*).—Valparaiso, one specimen.

116. Furnarius albogularis (*Spix*).—Three specimens, La Paz, April and July.

117. Upucerthia dumetoria *Geoffr. et d'Orb.*—Two specimens, Valparaiso.

118. Upucerthia ruficauda (*Meyen*).—One specimen, Valparaiso.

119. Cinclodes rivularis (*Cab.*).

Upucerthia vulgaris LAFR. ET D'ORB., Syn. Av., 1838, p. 22; Voy. dans l'Amer. Mérid., p. 372, pl. vii, fig. 1 (in part only).
Cillurus rivularis CAB., J. f. O., 1873, p. 319.
Cinclodes rivularis TACZ., Orn. Pér., II, p. 112.
? ? *Cinclodes albidiventris* SCL., P. Z. S., 1860, p. 77.

Two specimens, Valparaiso.

Lafresnaye and d'Orbingny's description of their *Upucerthia vulgaris* covers both *Cinclodes fuscus* (Vieill. et auct.) and *Cillurus rivularis* Cab., as shown both by the text and the types (Nos. 2382 and 2383) still in the Lafresnaye Collection. No. 2382 is the *Cinclodes fuscus* of authors, and is doubtless from "Santa Fé, rep. Argentina." The other, No. 2383, is the *C. rivularis* (Cab.), and is doubtless from "La Paz, rep. Boliviana." The bird figured is apparently No. 2382.

The *C. albidiventris* Scl. is perhaps a synonym of *C. fuscus*, as he has considered it (*cf.* P. Z. S., 1870, p. 786), though it may have to take precedence over *C. rivularis* (Cab.).

120. **Enicornis striata,** sp. nov.

Above head, neck, and upper back pale earthy brown, becoming more rufescent on the middle of the back, and pale, dull rufous on the lower back and upper tail-coverts. Remiges dusky, the primaries narrowly light-edged, the secondaries broadly edged with dull dark rufous; wing-coverts dull rufous. Tail at base, outer and middle pairs of rectrices entirely, and outer vanes of all the other rectrices, bright rufous; terminal half of inner vanes of fifth pair of rectrices black; fourth and third pairs with the black more extended basally, but less broadly on the third, especially apically. Superciliary stripes well-defined, whitish; auriculars pale rufous; chin, throat, and middle of the breast pure white; rest of under surface pale rufous, rather brighter posteriorly, broadly striped with white, anteriorly the feathers being white edged with pale rufous, and posteriorly brighter rufous centred rather broadly with white; lower tail-coverts pale cinnamon. Feet blackish; bill dusky horn color, lighter along the lower edge of the mandible and at its base.

Length (skin), 173 m. (6.75 in.); wing, 85 m. (3.50 in.); tail, 74 m. (2.90 in.); bill (exposed culmen), 24.5 m. (.95 in.); tarsus, 21 m. (.90 in.).

Type, No. 30,729, Am. Mus. Nat. Hist. *Habitat*, Chile (Valparaiso ?).

Differs from *E. phœnicurus* in its generally much lighter colors, small amount of black in the tail, and the *broad white streaking of the whole lower plumage.* The single specimen has the appearance of being fully adult. The exact location is unfortunately in doubt, but is almost unquestionably Valparaiso.

121. **Leptasthenura fuscescens,** sp. nov.

Pattern of coloration similar to that of *L. ægithaloides* (Kittl.), but the colors everywhere more intense and darker. Crown blackish, streaked narrowly with pale chestnut; a whitish superciliary stripe; nuchal collar and sides of head and neck streaked with dusky and whitish; back dusky olivaceous brown, becoming deep ashy brown on the rump and upper tail-coverts; wings blackish edged externally with whitish, except basal portion of primaries and outer secondaries, where the whole outer vanes are deep chestnut; all the coverts above dull reddish brown; lower wing-coverts olivaceous brown; inner webs of remiges, except outer primaries, pale cinnamon; tail black, outer web of most of the feathers light gray, this color (somewhat darkened) also occupying both vanes of the outer four pairs of rectrices (nearly the whole of both vanes of the outer pair), and becoming less and less on the succeeding feathers, occupying obliquely about an inch of the apical portion of the inner vane of the fourth pair; chin, throat, foreneck, and upper breast ashy white, slightly clouded with dusky posteriorly, the later color taking the form of indistinct spots on the breast; rest of lower parts dusky ashy olivaceous; bill and feet black.

Length (skin), 160 m. (6.30-6.40 in.); wing, 83 m. (2.30-2.40 in.); tail, 92 m. (3.80 in.); tarsus 15 m. (.60 in.); bill (culmen), 8.5 m. (.36 in.), commissure 12.5 m. (.50 in.), from nostril, 6 m. (.28 in.).

Types, Nos. 30,734 and 30,735, Am. Mus. Nat. Hist.; Falls of the Madeira.

In three specimens of *L. ægithaloides** the wing averages 52 m. (2.07 in.); the tail, 62 m. (3.43 in.); bill (culmen) 6 m. (.32 in.), and from nostril, 5 m. (22 in.). In color the difference between the two series of specimens is striking, being noticeable at a considerable distance. Below the light sandy or rufous brown in

---

* No. 48,880, U. S. Nat. Mus., ♂, Valdivia, Chile.
Lawrence Coll. (ex Mus. Berlepsch), Chile, Whitely, collector.
No. 18,117, Mus. Comp. Zoöl., ♂ ad., Chile (from Professor Philippi).

L. ægithaloides is replaced in *L. fuscescens* with a dark grayish olivaceous; the reddish streaks on the head are narrower and darker, and the whole upper surface many shades darker, with an olivaceous instead of pale rufous shading; the reddish area on the wing is also much darker and more sharply defined. The differences may be only subspecific, being simply of size and intensity of coloration.

122. Leptasthenura fuliginiceps boliviana, subsp. nov.

Similar to *L. fuliginiceps* but much larger, with the cap dusky brown instead of pale chestnut, the back olivaceous brown instead of grayish brown, the red of the wings and tail much darker, and and the lower parts much more fulvous. The wing is 65.5 m. (2.62 in.) against 61.5 in. (2.42 in.) in a specimen from Buenos Ayres (U. S. Nat. Mus., No. 66,594, from Dr. Burmeister), and the tail 10 m. (3.95 in.) against 92.5 m. (3.63 in.) in the Buenos Ayres specimen. The difference in size, and especially color, is quite marked, which, taken in connection with the wide geographical separation, renders it probable that the form from Northern Bolivia is separable as at least a well-marked geographical race. The differences, in fact, are almost parallel with those between *L. ægithaloides* and *L. fuscescens.*

123. Synallaxis griseiventris, sp. nov.

Above similar in color and markings to *S. frontalis;* below closely similar to *S. pudica;* tail intermediate in color between that of *S. frontalis* and *S. pudica.*

This species is of the size and general color above of *S. frontalis*, except that the tail is dark lurid brown instead of rufous. Below deep plumbeus, the feathers tipped with whitish on the throat and middle of abdomen; throat and foreneck deep black, partly concealed by the whitish tips of the feathers; sides olivaceous. Bill entirely black; feet dark brown.

Length (skin), 163 m. (6.80 in.); wing, 57 m. (2.25 in.); tail, 95 m. (3.75 in.). The bill is of the same size and form as in *S. pudica*—stouter than in *S. frontalis.*

Type (and only specimen), No. 30,738, Am. Mus. Nat. Hist.; Yungas, Bolivia.

124. Synallaxis humicola *Kittl.*—Valparaiso, two specimens.

125. Oxyurus spinicaudus (*Gm.*).—One specimen, Mapiri.

126. Thripadectes scrutator *Tacz.*—One specimen, Mapiri.

127. Philydor striaticollis *Scl.*—Two specimens, Yungas.

128. Anabazenops immaculatus, sp. nov.

Similar above to *A. oleagineus* Scl.,* but greener, more yellow below, and lacking entirely the whitish streaks of the breast and middle of the abdomen, so conspicuous in *A. oleagineus.* It is also much larger.

Above dark greenish olive, becoming more purely olive on the rump and upper tail-coverts; feathers of top of head and nape narrowly margined with blackish; superciliary stripe narrow above and in front of the eye, broad and distinct behind the eye, and deep fulvous or buffy golden; sides of head pale yellowish, streaked with dusky on the auriculars; chin, throat, breast, and middle of abdomen pale greenish yellow, purer and lighter anteriorly, and with partially concealed (subbasal) spots of black on the throat; sides and lower tail-coverts olivaceous; wings dusky, broadly edged with olivaceous anteriorly, and brownish olivaceous on the quills; inside of wings clear yellowish buff, deeping to pale cinnamon on the edges of the secondaries; tail clear deep chestnut above, paler below; bill above very light horn color, yellowish white below.

Length (skin), 173 m. (6.75 in.); wing, 84 m. (3.35 in.); tail, 77.5 m. (3.07 in.); tarsus, 43 m. (.70 in.); culmen, 15.5 m. (.61 in.); bill from nostril, 12.5 m. (.42 in.); gonys, 10 m. (.40 in.).

Type, No. 30,717, Am. Mus. Nat. Hist.; Northern Bolivia.

The single specimen on which this species is based is from Northern Bolivia, probably Yungas or Reyes. The collector's label having become detached the exact locality cannot be given.

---

*The specimen I identify with this species is one in the Lawrence Collection, received by Mr. Lawrence from Count von Berlepsch, and labelled "*Anabazanops rufosuperciliatus* (Lafr.) .... ♂ ....Rio Grande do Sul, S. Brazil (São Lawrence), 13 Jan. 1882; gesammelt von Dr. Hermann von Ihering." On comparison with Lafresnaye's types (Nos. 2355 and 2356, Coll. Boston Soc. Nat. Hist.) it proves to be very different from the true *A. rufosuperciliatus*, and seems to agree perfectly with *A. oleagineus* Scl. (P. Z. S., 1883, p. 654), based on specimens from Parana and Catamarca, Argentine Republic.

Since the above was sent to the printer, Mr Ridgway has kindly compared the Berlepsch specimen with one of the original specimens of *A. oleagineus* Scl. (*cf.* P. Z. S., l. c.) in the U. S. National Museum, and pronounces my identification correct.

This species needs no detailed comparison with any of its congeners. While resembling *A. oleagineus* above, the general color is much more greenish; the lower parts are *without light streaks*, and the ground color is light greenish yellow instead of deep olive.

129. Picolaptes warszewiczi (*Cab. et Heine*).

? *Thripobrotus warszewiczi* CAB. et HEINE, Mus. Hein., II 1859–60, p. 39.
Picolaptes peruvianus TACZ., P. Z. S., 1882, p. 28.
Picolaptes warszewiczi TACZ., Orn. Pér., 1884, p. 173.

A single specimen, taken at Yungas, seems to agree perfectly with Taczanowski's *Picolaptes peruvianus* (l. c.), which he has later referred to *Thripobrotus warszewiczi* of Cabanis and Heine. Before making this identification I had considered it as representing an unnamed species, and had drawn up the following description, which may help to elucidate its characters.

Above almost exactly like *P. affinis*, both in color and markings; below similar to *P. affinis*, except that the light throat area is more restricted and more of a pale lemon yellow tint, passing into clear whitish posteriorly, with the feathers strongly and more conspicuously edged with deeper black; the general ground color below is purer (more greenish) olivaceous, with the median stripes of each feather much narrower and whiter, and the dark margins wider and blacker; sides of the head whiter, with the feathers more sharply edged with black. In general size, length of wing and tail, and in the size, form, and color of bill closely similar to *P. affinis;* the inner vanes of the remiges, apically, are, however, darker.

It thus differs mainly from *P. affinis* in the different tone of the ground color below, in the color of the throat and sides of the head, and in the light streaks being narrower and whiter, edged with broader and blacker margins.

It also resembles *P. lacrymiger* (Lafr.), but on comparison with Lafresnaye's types it differs much more widely from this species, both above and below, than from *P. affinis* (Lafr.), of which also the types are before me, as well as a considerable series of Mexican examples of this species from other sources. Comparisons heretofore appear to have been made only with *P. lacrymiger* and *P. albolineatus*, to which latter species (of which also the types* are before me) it bears no very close resemblance, being about one-third larger, and very differently colored, except in the markings below.

130. Thamnophilus major *Vieill.*—Two males, Reyes; one female, Falls of the Madeira.

131. Thamnophilus radiatus *Vieill.*—Two males, Yungas and Reyes; one female, Falls of the Madeira.

132. Thamnophilus (ruficollis *Spix ?*).—Female, Yungas.

This specimen is provisionally referred to *Thamnophilus ruficollis* Spix (= *Thamnophilus amazonicus* Scl.), but it does not well agree with the descriptions and figures of that bird, and is certainly distinct from specimens in the Lawrence Collection and in that of the National Museum labelled *Thamnophilus amazonicus*. The size is somewhat larger, and the rufous much deeper, the throat, breast, upper part of abdomen, and lower tail-coverts being deep orange rufous; the flanks and lower abdomen are brownish rufous; the whole top and sides of the head are deep chestnut; back pale rufous brown, the interscapulars white at base, varied with black subapically, the lower back passing into pale brownish gray; scapulars blackish, varied slightly with pale brownish, and broadly edged with white externally; rectrices black, the inner secondaries broadly edged externally with white, the primaries narrowly edged with yellowish white; inner vanes edged with white, except the two outer primaries, increasing on the inner primaries and secondaries; lesser wing-coverts brownish, middle and greater coverts black broadly tipped with white;

---

* **Picolaptes obtectus,** sp. nov.

Picolaptes lacrymiger Lafr., Rev. Zool., 1850, p. 154 (in part).

There are two birds in the Lafresnaye Collection in the Museum of the Boston Society of Natural History which purport to be the types of Lafresnaye's "*Dacrymophorus albolineatus.*" They differ too widely to be regarded as specifically identical. The one agreeing best with Lafresnaye's description is No. 2238 (Coll. Boston Soc. Nat. Hist.), which has the top of the head and neck much darker than the back and marked as in *P. lacrymiger*, as said by Lafresnaye. The other (No. 8489, Coll. Boston Soc. Nat. Hist.) has the ground color of the head much lighter,—very pale sandy brown anteriorly,—with the spots reduced to very narrow pale shaft-lines, slightly more distinct on the sides of the occiput and forehead; the head is thus much lighter than the back instead of much darker, as is the case in the other specimen, and as the description calls for. In other respects the coloration and markings are quite similar. While the two specimens are of the same size as regards the wings and tail, No. 8489 has much larger feet and a longer and stouter bill. It would thus seem that No. 8489 cannot be an immature example of the form represented by No. 2238, as the coloration of the head might suggest. In fact, No. 8489 has the appearance of being fully adult. As it appears to agree with none of the commonly recognized species, of which I have examined authentic examples of all but two, which descriptions and figures show have no near affinity with the specimen in question, I propose to designate it as *Picolaptes obtectus*, sp. nov.

tail black, broadly tipped with white, the white extending basally on the outer vane of the outer feather for nearly an inch. Length (skin), 13.6 m. (5.40 in.); wing, 67 m. (2.60 in.); tail, 59 m. (2.30 in.); tarsus, 17 m. (.70 in.); exposed culmen, 17 m. (.70 in.).

Taczanowski's detailed description of the female of *T. amazonicus* (Orn. du Pérou, II, p. 10), based on Sclaterian specimens, agrees very closely with the bird above described, which may be an example of this species in high plumage.

133. Myrmelastes plumbeus *Scl.*—Male, Reyes.

134. Myrmotherula axillaris (*Vieill.*).—Male and young male, Falls of the Madeira; female, Mapiri.

135. Formicivora bicolor *Pelz.*—Female, Lower Beni River.

136. Cercomacra tyrannina *Scl.*—Two males,—Mapiri, April, and Reyes, June.

Myrmochanes, gen. nov.

Bill long, depressed, broad at base, becoming rapidly narrower and attenuate, commissure slightly arched; nostrils open, linear oval; wings rounded, fourth, fifth, and sixth primaries longest and subequal; tail short, graduated, about three-fifths as long as the wing; tarsus long, distinctly scutelate behind as well as in front.

Type, *Myrmochanes hypoleucus*, sp. nov.

The bird on which the present species is based is about as large as an average sized species of *Formiccivora* or *Myrmotherula*, with, however, a very much longer and more flattened bill, and very much longer and heavier tarsi and feet. Its position in the family is apparently near *Pyriglena.*

137. **Myrmochanes hypoleucus,** sp. nov.

Whole head and nape, including sides of head and neck and sides of jugulum, intense black; back black, scapulars and interscapulars broadly white at base; upper tail-coverts black, tipped with white; wings black, median and greater coverts tipped with small oval spots of white; under wing-coverts, axillars, and inner surface of wing, except apically, pure white; whole lower surface, except sides of jugulum, including lower tail-coverts, pure white, with a few slight traces of black bars across the chest; bill and feet wholly black.

Length (skin), 11 m. (4.00 in.); wing, 52 m. (2.05 in.); tail, 40 m. (1.60 in.); bill (culmen), 17.5 m. (.70 in.); bill from nostril, 10 m. (.40 in.); width at base, 6 m. (.28 in.); width at nostril, 4.5 m. (.14 in.); tarsus, 23 m. (.91 in.); middle toe with claw, 16 m. (.63 in.); hind toe (with claw), 14 m. (.58 in.).

Type, No. 30,714, Am. Mus. Nat. Hist.; Reyes, June, 1886. The single specimen on which the species is based is unfortunately in bad condition, the tail being imperfect, and the tip of the lower mandible lacking.

138. Pyriglena picea *Cab.*—Male, Mapiri, April, 1886.

139. Pyriglena serva *Scl.*—Male, Lower Beni River, August.

140. Hypocnemis leucophrys (*Tsch.*).—Male, Reyes; female, Lower Beni River.

141. Conopophaga rusbyi, sp. nov.

Above intense dark chestnut, becoming slightly lighter (olivaceous) on the rump and upper tail-coverts; pileum dusky reddish brown, passing into dusky gray on the front; postocular stripe of loose lengthened feathers pure light gray; sides of head gray, becoming dusky on the auriculars; lower parts gray, lighter on the throat, whitish on the middle of the abdomen, and tinged with olive on the flanks; remiges blackish, broadly edged externally with the color of the back; rectrices dusky, olive brown externally; entire bill deep black; tarsi and feet brownish.

Length (skin), about 93 m. (3.60 in.); wing, 77 m. (3 in.); tail, 45 m. (1.80 in.); tarsus, 34 m. (1.25 in.); bill (exposed culmen), 16 m. (.62 in.).

Type, No. 30,701, Am. Mus. Nat. Hist.; Reyes, June, 1886.

In general style of markings this species resembles *C. ardesiaca* Lafr., but is larger, and entirely different in coloration. It seems, in fact, to be not very nearly related to any previously described species of the genus.

142. Phlogopsis notata, sp. nov.

Head, neck, and chest uniform deep black, becoming duller on the upper part of abdomen; rest of lower parts plain dull olive; rest of upper parts clear light olive, the scapulars, interscapulars, and wing-coverts broadly centered with black, forming broad longitudinal streaks occupying nearly half the width of the feathers; on the rump the spots are smaller, occupying the extremity of the feathers, which are elongated and fluffy, more or less concealing the black spotting; bend of the wing and edge of the shoulder white spotted with black, the white invading the base of the anterior scapulars; upper and lower tail-coverts deep chestnut, the former obscurely and irregularly barred with black near the base; tail deep chestnut, the shafts of the feathers black nearly to the end, where the black shaft-line terminates in a narrow sagittate spot, well marked only on the outer feathers; wings externally slightly paler than the tail, passing into olivaceous on the inner secondaries, which have a broad central spot of black near the tip, decreasing in size to the outermost, where it is reduced to a small touch of black, confined wholly to the outer web; inner surface of wings pale chestnut, passing into dusky towards the tips of the feathers; broad naked space around the eye orange; bill black; tarsi and feet brownish.

Length (skin), 160 m. (6.25 in.); wing, 90 m. (3.50 in.); tail, 64 m. (2.60 in.); bill (exposed culmen), 21 m. (.80 in.); bill from nostril, 12 m. (.50 in.); tarsus, 29 m. (1.18 in.); middle toe (with claw), 26 m. (1.05 in.).

Type, No. 30,707, Am. Mus. Nat. Hist.; Lower Beni River, August, 1886.

The nearest allies of the present species are *P. nigromaculata* (Lafr. & d'Orb.) and *P. bowmani* Ridgw., with the types of both of which species the single specimen of *P. notata* has been compared. From *P. nigromaculata* it differs in the much paler, almost grayish olive, of the upper surface, and the very much larger size of the black markings, these in *P. nigromaculata* being small, drop-shaped spots at the tips of the feathers, whereas in *P. notata* they are broad and long, occupying much more than half of the exposed portions of the interscapulars, and on the scapulars and wing-coverts running nearly to the base of the feathers. The chestnut of the wings and tail is not so deep, and the nearly complete subterminal black bar on the tail in *P. nigromaculata* is represented in *P. notata* by slight sagittate shaft-spots, almost obsolete on the inner feathers. Also the white margins to the feathers of the fore-back in *P. nigromaculata* are wanting in *P. notata.*

From *P. bowmani* it differs mainly in the form of the black markings on the dorsal surface, which in *P. bowmani* are *transverse*, forming a broad bar at the extreme tips of the feathers, giving not only a very different effect but a decidedly reversed pattern. There is a close resemblance in the general tone of the colors, although in *P. bowmani* the back is a little yellower olive, while the tail is darker, and has as distinct a subterminal black bar as is seen in *P. nigromaculata.*

143. Formicarius analis (*Lafr. et d'Orb.*).—One specimen, Yungas.

This specimen agrees with the type of the species in the Lafresnaye Collection, except that there is somewhat less rufous on the sides of the neck.

144. Scytalopus bolivianus, sp. nov.

Similar in general coloration to *S. analis*, but much smaller, with a very much shorter and relatively stouter bill. General color slaty black ; a large squarish spot of pure white on the crown ; rump, upper and lower tail-coverts, flanks, and anal region rufous, heavily barred with black ; middle of the belly conspicuously whitish ; bill entirely black ; feet olivaceous brown.

Length (skin), 114 m. (4.50 in.) ; wing, 50 m. (2.00 in.) ; tail, 38 m. (1.50 in.) ; bill (exposed culmen), 12 m. (.50 in.) ; gonys, 7 m. (.30 in.) ; tarsus, 24 m. (.95 in.) ; middle toe (with claw), 22.5 m. (.90 in.) ; hind toe (with claw), 16 m. (.67 in.) ; hind claw, 6.5 m. (.27 in.).

Type, No. 30,741, Am. Mus. Nat. Hist. ; Reyes, Bolivia, June, 1886.

The single specimen collected by Dr. Rusby is in fine adult plumage and in good condition.

NOTE ON **Pteroptochos albifrons** *Landb.**—I have before me two specimens (Nos. 18,146 and 18,149, Mus. Comp. Zoöl.), sent by Professor Philippi some years since to the Agassiz Museum, Cambridge, Mass., labelled "62. *Scytalopus albifrons* Landb., Chile." One is marked "♂ ad.," the other "♀ horn." After comparing them with an undoubted specimen of *S. magellanicus* from Ecuador, I was surprised to find "*Pteroptochus albifrons* Landb.," in Mr. Sclater's list of synonyms (Ibis, 1874, p. 193) of *S. magellanicus*, and still more so upon referring to Landbeck's description (l. c.), which accurately coincides with the birds labelled *S. albifrons* by Professor Philippi, as above stated. They are certainly not "nigro-plumbeus unicolor" (Sclater, l. c.), the wings being apically decidedly brownish, and the rump rufous faintly barred with black; while the flanks, anal region and lower tail-coverts are "helles Rostgelb," and "fein schwarz quergebändert." Besides, *S. albifrons* is much smaller than *S. magellanicus*, with a much smaller, slenderer and lighter colored bill, and very much smaller tarsi and feet, which are also very much lighter in color.

From the evidence at hand it seems necessary to recognize *S. albifrons* as a 'good species,' or at least as not referable to *S. magellanicus*.

144. Hylactes castaneus *Phil. et Landb.*—One specimen, labelled "Valparaiso." It is a young bird, probably a bird of the year, which I at first referred doubtfully to *H. tarnii* King, but the reception of more material enables me to refer it with much confidence to *H. castaneus*. It differs from the adult (compared with a specimen in the Cambridge Museum of Comparative Zoölogy, No. 18,132, received from Professor Philippi, labelled "♀ ad.") in being rather more olivaceous above, particularly on the wings and tail, the chestnut feathers of the head tipped with black, the chestnut supercilliary stripe blackish with olivaceous edgings, the chestnut of the throat and foreneck duller and shaded with olive, the breast variegated with pale chestnut and black. The tipping of the greater coverts and inner secondaries is more distinct, the subapical pale chestnut spot on each feather being distinctly bordered with a terminal bar of black.

---

* *Pteroptochos albifrons* Landb., Wiegm. Arch., 1857, i, p. 273.

In this connection attention may be called to a singular specimen in the Verreaux Collection (No. 5422, Am. Mus. Nat. Hist.) labelled "*Hylactes tarnii* King....Chile," interesting mainly as illustrating the freaks of taxidermists. The bird, the wings excepted, is an overstuffed specimen of *H. tarnii*, but the wings, besides being one-third too large (measuring 133 m. = 5.20 in.) for this species, present a pattern of coloration entirely unlike that of any member of the family Pteropotochidæ. While the fraud was easily detected, the identification of the wings was at first puzzling, but were found eventually to be those of a female or immature male Roulroul (*Rollulus roulroul*), as kindly determined for me by Mr. Ridgway.

145. Hydropsalis, sp. incog.—One specimen, in bad condition and a very young bird, Lower Beni.

146. Eupetomena hirundo *Gould.**—Reyes, three specimens, June, 1886.

147. Petasophora anais iolota (*Gould*).—Seven specimens, Yungas.

148. Patagona gigas (*Vieill.*).—One specimen, Valparaiso. Lower surface unusually dark.

149. Eustephanus fernandensis (*King*).—Male, female, and an immature bird, obtained in exchange at Valparaiso, the birds doubtless coming originally from Juan Fernandez Island.

150. Thalurania nigrofasciata (*Gould*).—Three males and one female, Yungas and Mapiri.

151. Lophornis regulus *Gould.*—Two males and a female, Mapiri.

152. Steganura addæ (*Bourc.*).—Two males, Yungas.

153. Chrysuronia josephinæ (*Bourc. et Muls.*).—Two males and a female, Mapiri.

154. Chrysuronia chrysura (*Less.*).—One example, Reyes.

155. Adelomyia inornata (*Gould*).—Male, Yungas.

---

*The Hummingbirds contained in the Rusby Collection have been kindly identified for me by Mr. D. G. Elliot.

156. Aglæactis pamela (*Lafr. et d'Orb.*). — Yungas, two specimens.

157. Agyrtria alleni *Elliot.*

Agyrtria alleni ELLIOT, Auk, V, 1888, p. 263.

One specimen, Yungas, type of the species.

158. Chlorostilbon prasinus (*Less.*).—Two males, Yungas and Mapiri.

159. Dryoscopus lineatus (*Linn.*). — Two males and one female, Mapiri and Yungas.

160. Chloronerpes nigriceps (*d'Orb.*).

Chloronerpes malherbii SCL., Cat. Am. Bds., 1862, p. 338.

One specimen, female, Mapiri, April.

161. Chloronerpes fumigatus (*Lafr. et d'Orb.*). — Male, Yungas.

162. Chloronerpes canipileus (*d'Orb.*).—Female, Reyes.

163. Melanerpes cruentatus (*Bodd.*). — Male, Yungas; female, Mapiri.

164. Colaptes rupicola (*Lafr. et d'Orb.*). — Female, Valparaiso.

165. Celeus flavus (*Müll.*). — One specimen, Lower Beni River.

[Very rare.—R.]

166. Momotus nattereri *Scl.*—One specimen, Yungas.

167. Momotus microstephanus *Scl.*—One specimen, Lower Beni.

168. Ceryle stellata (*Meyen*).—Three specimens, Reyes and Lower Beni.

169. Ceryle amazona (*Lath.*).—Two males and one female, Lower Beni.

170. Ceryle americana (*Gm.*). — Male and female, Lower Beni.

171. Ceryle superciliosa (*Linn.*).—Male, Lower Beni.

172. Trogon collaris *Vieill.*—Male and Female, Lower Beni.
[Common.—R.]

In the male the breast and the whole upper surface are deep green, with only the faintest shade of golden ; the white bars on the wing-coverts and tail-feathers are slightly broader than the intervening black ones ; and the wing (length 110 mm.) is three-fourths of an inch shorter than in a Quito specimen or than the measurement given by Taczanowski, who refers (Orn. Pér., II, p. 164) to the individual variation in color in different males of this species.

173. Trogon variegatus *Spix.*—Male and Female, Lower Beni.

[Common.—R]

174. Trogon viridis *Linn.*—Male, Lower Beni.

[Abundant.—R.]

175. Trogon melanurus *Sw.*—Male and female, Lower Beni.

[Common.—R.]

176. Galbula rufoviridis *Cab.*—Two specimens, Reyes.

[Abundant. Of sedentary habits and very stupid.—R.]

177. Urogalba paradisea amazonum (*Scl.*).—One specimen, Reyes.

[Rare. In general habits resembles the next species.—R.]

178. Galbalcyrhynchus leucotis *Des Murs.*—Lower Beni, female. The bill is very long, the culmen measuring 60 m., or about 7 m. longer than the maximum given by Sclater in his monograph of the family.

[Very abundant. The most stupid of birds, sitting all day in half sunshine, occasionally darting off to catch insects.—R.]

179. Bucco chacuru (*Vieill.*).—One specimen, Reyes.

180. Monasa peruana *Bon.*—One specimen, Mapiri.

181. Monasa nigrifrons (*Spix*).—Two specimens, Reyes and Mapiri.

[Common, and extremely stupid. It does not fly promptly when approached, apparently owing to stupidity rather than courage. Usually sits on a twig near the trunk of a tree, seldom more than twenty feet from the ground, uttering from time to time a single, dull uniform note. It flies off clumsily now and then in pursuit of insects, returning again to its perch.—R.]

182. Chelidoptera tenebrosa (*Pall.*).—One specimen, Falls of the Madeira.

183. Crotophaga ani *Linn.*—One specimen, Mapiri.

[Abundant and familiar. Inhabits open swampy or grassy places, and also common about houses. It is very friendly with man, and seems to recognize a human acquaintance, responding by cries and movements to a friendly salutation.—R.]

184. Dromococcyx phasianellus (*Spix*). — One specimen, Lower Beni.

[Seen only once; said to be rare.—R.]

185. Piaya cayana (*Linn.*).—One specimen, Reyes.

[Common. Flits rapidly and softly among the trees of partial open hillsides. The tail is usually very ragged.—R.]

186. Rhamphastos toco (*Gm.*).—One specimen, Reyes, June.

[Common.—R.]

187. Rhamphastos cuvieri *Wagl.*—One specimen, Reyes, June, 1886.

[Rather uncommon.—R.]

188. Pteroglossus beauharnaisi *Wagl.* — One specimen, Lower Beni, August, 1886.

[Very rare.—R.]

189. Pteroglossus castanotis *Gould.*—One specimen, Lower Beni, August, 1886.

[Common.—R.]

190. Aulacorhamphus cæruleicinctus (*d'Orb.*). — Two specimens, Yungas, Sept., 1885.

[Abundant.—R.]

191. Ara ararauna (*Linn.*).—Two specimens, Lower Beni River, August, 1886.

[These Macaws usually fly in pairs; even if many are flying together they tend to keep in couples. They fly high and are difficult to shoot. Their feathers are an important article of trade, being used by the savage tribes in their social and religious rites. The larger Macaws are tamed and kept for their feathers, which are gathered annually. Their flesh is also highly prized for food.—R.]

192. Ara severa (*Linn.*). — Two specimens, Lower Beni, August, 1886.

193. Conurus pavua (*Bodd.*).—One specimen, Falls of the Madeira, Oct., 1886.

194. Conurus weddelli (*Deville*). — One specimen, Lower Beni, August, 1886.

195. Conurus aureus (*Gm.*).—One specimen, Lower Beni, August, 1886.

196. Conurus molinæ *Mass. et Souancé.* — One specimen, Falls of the Madeira, Oct., 1886.

197. Conurus rupicola *Tsch.*—One specimen, Yungas, Sept., 1885.

198. Bolborhynchus aymara *d'Orb.*—One specimen, Lower Beni, August, 1886.

199. Brotogerys xanthoptera (*Spix*).—One specimen, Falls of the Madeira, Oct., 1886.

200. Brotogerys tui (*Gm.*).—Two specimens, Reyes, June, and Falls of the Madeira, Oct., 1886.

201. Amazona ochrocephala (*Gm.*).—One specimen, Yungas, March, 1885.

202. Pionus menstruus (*Linn.*). — One specimen, Lower Beni, August, 1886.

[This species is regarded as the best "talker," and seems to possess an articulate language in the wild state, aside from the ordinary cries of its tribe.—R.]

203. Pionus corallinus *Bon.*—One specimen, Lower Beni, August, 1886.

204. Glaucidium nanum (*King*).—One specimen, Valparaiso.

205. Asturina nitida (*Lath.*).—One specimen, Lower Beni, August, 1886.

206. Rupornis pucherani (*J. et E. Verr.*).—One specimen, Mapiri, Bolivia, April, 1886.

207. Rupornis magnirostris (*Gm.*).—One specimen, Lower Beni, August, 1886.

208. Buteo albicaudatus *Vieill.*—One specimen, Bolivia.

209. Urubitinga zonura (*Shaw*). — One specimen, Lower Beni, July, 1886.

210. Accipiter chilensis *Ph. et Landb.* — One specimen (immature), Valparaiso.

[This or a similar species is called "Anta-caller" by the natives, Anta being the name of the Tapir. The natives say that the cry resembles that of the Tapir, and that the Tapir comes to the bird, which then goes down and picks the flies from it.—R.]

211. Falco sparverius cinnamominus (*Swain.*).—One specimen, female, Yungas, April, 1885.

212. Ictinia plumbea (*Vieill.*).—Three specimens, two adults, Lower Beni, and one in nestling plumage, Mapiri, May, 1886.

[A very difficult bird to shoot, because of its habit of sitting on the top of the tallest dead tree of the vicinity. It is, however, very bold, remaining while shot after shot is fired at it, and then frequently flying only a few yards and returning to its original perch.—R.]

213. Ibycter ater (*Vieill.*). — One specimen, Lower Beni, July, 1886.

214. Milvago megalopterus (*Meyen*).—One specimen, Reyes, June, 1886.

215. Columba speciosa *Gm.*—One specimen, Lower Beni, August, 1886.

[Very wary and difficult to shoot. Apparently more or less arboreal.—R.]

216. Zenaida maculata (*Vieill.*). — One specimen, Reyes, June, 1886.

217. Columbigallina talpacoti (*Temm.*). — One specimen, Lower Beni, August, 1886.

[Very abundant, and similar in habits to the Ground Dove of the United States.—R.]

218. Gymnopelia erythrothorax (*Meyen*).—Two specimens, both immature, near La Paz, Bolivia.

219. Peristera cinerea (*Temm.*).—One specimen, Lower Beni, August, 1886.

[Common in large flocks, associating with the next, which they resemble in habits.—R.]

220. Engyptila rufaxilla (*Rich. et Bern.*).—Two specimens, Reyes, Bolivia, June, 1886.

[Common in shrubby or more or less open ground.—R.]

221. Geotrygon montana (*Linn.*).—Three specimens, one male and two females, Lower Beni, August, 1886.

[Quite abundant. Seen usually on the ground, where it moves swiftly, but can scarcely be seen or heard.—R.]

222. Crax carunculata *Temm.*—One specimen, Lower Beni, August, 1886.

[This and the following species I supposed were only individuals of different age and the same species, and this is the opinion of the natives. They are abundant birds and are found singly or in flocks of five to fifteen. Their habits are quite similar to those of our Turkey. These are the great food-species of the lower country. They are seldom found above 1500 feet elevation. The flesh is richer than that of our Turkey, and I can hardly conceive of a richer diet than a stew of these birds with rice. But if eaten extensively it is irritating to the system. The natives say that this is due at certain seasons to its eating the poisonous fruit of a tree (of the *Euphorbia* family ?), and that at that season, the bones, eaten by dogs, will prove fatal.—R.]

223. Mitua tuberosa (*Spix*). — One specimen, Lower Beni, August, 1886.

224. Penelope boliviana *Reich.* — One specimen, Lower Beni, August, 1886.

[In the higher country—1500 to 6000 feet—these two species* of *Penelope* replace the *Crax* and *Mitua*, as food-species, and are very abundant, going in small flocks of three to six. The flesh is white, of fine texture, and of excellent flavor.—R.]

225. Penelope sclateri *Gray.*—One specimen, Yungas, Sept., 1886.

---

*They are not distinguished as different species in the collector's original notes.—J. A. A.

226. Pipile cumanensis (*Jacq.*).—One specimen, Falls of the Madeira, Oct., 1886.

[Seen in small flocks of ten to twenty-five, in the small trees bordering the rivers.—R.]

227. Ortalis guttata (*Spix*).—One specimen, Lower Beni, August, 1886.

[Not Common.—R.]

228. Opisthocomus cristatus (*Lath.*).—One specimen, Lower Beni, August, 1886.

[Collects in large flocks about stagnant pools and sluggish streams, and acts much like our Crow, except that it is much more sluggish. It makes a great clamor, but its cry is rather squally and feeble. It is very stupid, and a number may be shot before the others will attempt to escape. Its native name of "Loco", or "crazy bird," is well justified. It has a horribly vile odor of carrion, though said by the natives to feed on leaves.—R.]

229. Gallinula garmani *Allen.* — One specimen, Lake Titicaca, August, 1885.

[Very common.—R.]

230. Fulica ardesiaca *Tsch.*—Two specimens, Lake Titicaca, August, 1885.

[Abundant.—R.]

231. Heliornis fulica (*Bodd.*).—Two specimens, Lower Beni, August, 1886.

[Common, but not abundant, on narrow, darkly shaded, deep sluggish streams in the depths of the forest. It is very wary, taking flight quickly, and swimming swiftly, keeping well under cover of the overhanging bushes.—R.]

232. Eurypyga helias *Pall.*—One specimen, Reyes, June, 1886.

[Called Peacock by the natives, and has the same habit of spreading its tail as that bird. Common about pools in the forest.—R.]

233. Psophia leucoptera *Spix.*—One specimen, Lower Beni, August, 1886.

[Native name, "Corcovado." This is the most interesting bird of the collection. It is almost worshipped by the Spanish settlers,

1889.]

because of its amiable, domestic habits. It is very easily domesticated, but is one of the most delicate of birds, dying from the slightest cause, and seldom living more than a year in a state of domestication. It runs about after its human friends, quickly forming the warmest attachment to certain individuals, seldom leaving them during the day. Much that is said of it is of course exaggerated, or imaginative, but I can vouch for the following. Early in the morning it will enter the apartment of a member of the family and salute him, on rising, by dancing about, bobbing its head, and bringing its wings and tail down somewhat after the fashion of our Turkey. On being spoken to or noticed it runs out to find another member of the family. In this way it will very soon visit several, or perhaps all, of the household, finally attaching itself to one of them for a large part of the day. It at once distinguishes the approach of a stranger, running out and giving him a similar greeting. Although at times vivacious, it is exceedingly gentle in action, look, and note, the latter giving the impression of sadness. In the forest, as about habitations, it utters a low, liquid *oo-oo-oo-oo-oo* sound, at first full, clear, and slow, but becoming more rapid, shorter, and sharper but lower, until it dies in a prolonged *oo*. It is said to do this regularly all night on the hour. To a certain extent I have observed this to be true, but I think it is excited thereto by the striking of the clocks. Its flesh is highly esteemed.—R.]

234. Jacana jacana *Linn.*—Two specimens, Reyes, June, 1886.

[Frequents marshes and shallow lakes, where lilly-pads abound, over which it runs with great swiftness and dexterity. It rarely flies, and then skims near the surface of the water. I was much interested in its manner of training its young, which it encourages by cries and gestures to leap from one lilly-pad to another. When the feat is accomplished there is great and noisy rejoicing. There is probably great danger of the young being caught by the voracious fishes which abound in such places.—R.]

235. Vanellus resplendens (*Tsch.*).—One specimen, La Paz, August, 1885.

[Very common on the high table-lands. Several are usually found together, though it can hardly be said to be in flocks. It is not confined closely to the vicinity of lakes, but ranges widely over the hills and plains, at least during portions of the day. Its habits in general are strikingly like those of our Killdeer, and its cry is similar, but much louder, and in the same way is inclined to circle about the head of an intruder.—R.]

236. Charadrius dominicus *Müll.*—Two specimens, Lower Beni, August, 1886.

[Common, and comes about the habitations along the rivers. Also frequents clearings.—R.]

237. Ægialitis nivosa (*Cass.*).—One specimen, without locality (from loss of label).

238. Ægialitis collaris (*Vieill.*).—Two specimens, Reyes and Falls of the Madeira (the latter young), Oct., 1886.

[Frequents the marshes and shores of the lakes, often flying out into the half-dry adjoining meadows.—R.]

239. Tringa maculata (*Vieill.*).—One specimen, Falls of the Madeira, Oct., 1886.

240. Tringa fuscicollis (*Vieill.*).—One specimen, Falls of the Madeira, Oct., 1886.

241. Calidris arenaria (*Linn.*).—One specimen, Lower Beni, August, 1886.

242. Micropalama himantopus (*Bon.*).—One specimen, Falls of the Madeira, Oct., 1886.

243. Totanus melanoleucus (*Gm.*).—One specimen, Falls of the Madeira, Oct., 1886.

244. Actitis macularius (*Linn.*). — One specimen, young, Lower Beni, August, 1886.

245. Bartramia longicauda (*Bechst.*).—One specimen, Lake Titicaca, August, 1885.

246. Ardea caudidissima *Gm.* — Three specimens, Reyes, June, 1886.

[One of the most abundant of birds, particularly on the high table-lands.—R.]

247. Ardea virescens *Linn.* — One specimen (immature), Reyes, June, 1886.

[Not very common.—R.]

248. Tigrisoma brasiliense (*Linn.*).—One specimen, Lower Beni, July, 1886.

[Not uncommon.—R.]

249. Nycticorax nycticorax nævius (*Bodd.*).—One specimen, Lower Beni, July, 1886.

[Not common. Esteemed for its flesh by the Indians.—R.]

250. Nycticorax pileatus (*Bodd.*).—One specimen, Reyes, June, 1886.

[Not very common, keeping in small flocks.—R.]

251. Palamedea cornuta *Linn.*—One specimen, Lower Beni, August, 1886.

[Called "Unicorn Bird." Not common, frequenting sandy river banks, and going in pairs. It is the most difficult bird to approach that I ever saw, its hearing appearing to be phenomenally acute. It is almost impossible to shoot it except with a rifle, with which this specimen was procured.—R.]

252. Cairina moschata (*Linn.*).—One specimen, Lower Beni, July, 1886.

[This is the commonest of the three common river Ducks of Eastern Bolivia. It attains a large size, and is an important article of food for travellers. It differs much in habits from the other species. They, when wounded, take to the woods, and under no circumstances will go into the water. But this species, when wounded flies at once into the river, a thing it will rarely do when uninjured. It is almost immediately seized and drawn under by the fish or alligators when it alights on the water. I never saw one remain in the water five minutes without getting caught. Its worst enemy is a fish of the carp family, weighing about twenty-five pounds. It is owing to this danger, I suppose, that the Ducks are here rarely seen on the water of the river or its large branches. They paddle a little by the margin and sleep on the mud flats.—R.]

253. Anas cyanoptera *Vieill.* — Male and female, Lake Titicaca, August, 1885.

[Very abundant in Lake Titicaca.—R.]

254. Anas oxyptera *Meyen.*—Male, Lake Titicaca, August.

[Very abundant in Lake Titicaca.—R.]

255. Anas puna *Tsch.*—Male, Lake Titicaca, August, 1885.

[Very abundant in Lake Titicaca.—R.]

256. Anas cristata *Gm.*—Male, Lake Titicaca, August, 1885.

[The common Duck of the streams, swamps, and small lakes of the Bolivian table-land. Rather uncommon, so far as I observed, at Lake Titicaca.—R.]

257. Dafila spinicauda (*Vieill.*).—Female, Lower Beni, July, 1886.

[Common along the rivers.—R.]

258. Erismatura ferruginea *Eyton.*—Male and female, Lake Titicaca, August, 1885.

[Common, but not so abundant as the other species of Ducks. It is called "Water Hog," on account of its wonderful fatness. It usually exposes only a small part of its body in swimming, and when alarmed only a small portion of the head.—R.]

259. Phalacrocorax brasilianus (*Gm.*). — One specimen, Lake Titicaca, August, 1885.

260. Anhinga anhinga (*Linn.*).—Female, Lower Beni, August, 1886.

261. Larus serranus *Tsch.*—One specimen, Lake Titicaca, August, 1885.

[Most abundant of the Gulls at Lake Titicaca, and of quite peculiar habits.—R.]

262. Larus cirrhocephalus *Vieill.*—One specimen, without locality (label lost).

263. Sterna magnirostris *Licht.* — One specimen, Lower Beni, August, 1886.

264. Podiceps rollandi *Quoy et Gaim.*—One specimen, Lake Titicaca, August, 1885.

265. Centropelma micropterum (*Gould*).—One specimen, Lake Titicaca, August, 1885.

266. Tinamus guttatus *Pelzeln.*—One specimen, Falls of the Madeira, Oct., 1886.

[Common. In flesh and habits similar to our Partridges. Shy and difficult to shoot.—R.]

267. Crypturus pileatus (*Bodd.*).—One specimen, Falls of the Madeira, Oct., 1886.

[Common. Similar in habits to the preceding.—R.]

ARTICLE VIII.—*Note on the faunal resemblance between the Cretaceous formations of New Jersey, and those of the Gulf States.* By R. P. WHITFIELD.

In working over a very limited collection of Cretaceous fossils from Alabama, Mississippi and Texas, in the American Museum of Natural History, I have been somewhat surprised at the very large number of species which are identical with those from the Cretaceous green marls of New Jersey, which I have recently worked over for the geological survey of that State. The collection in question consists very largely of specimens, principally of internal casts, from Prairie Bluff, Ala., and a very small number of specimens from Texas and Mississippi. Were it possible to compare a more extended collection from the two latter States, I have no doubt that a much greater number of identical species would be found. At the request of Dr. C. A. White, of the National Museum at Washington, I have concluded to publish the accompanying list at the present time, although I should have preferred to wait until a more thorough study of larger collections could have been made. There is sufficient evidence here, however, to show the strong faunal relations which exists between the Cretaceous marls of New Jersey and the Cretaceous of the Gulf States. Besides the identical species given in the table, there are a number of closely allied forms in the two regions, such as *Rostellites Texanus*, Conrad, and *R. texturatus*, Whitf. from New Jersey, which increase the resemblance. The greater number of identical species shown between the Prairie Bluff beds and the New Jersey marls, than is shown in the Texas or Mississippi regions, may arise largely from the fact that the collections from the latter localities which I have been able to study, are so limited, rather than that no others exist.

Without drawing any very definite deductions from the showing, here presented, at the present time, I give the following table of species, and reserve further observations to a more favorable opportunity.

Table showing the species of New Jersey Cretaceous Molluscan fossils which have been recognized in Alabama, Mississippi, Texas or Dakota:

	Ala.	Miss.	Tex.	Dak.
BRACHIOPODA:				
Terebratula floridana, Morton	*			
LAMELLIBRANCHIATA:				
Monomyaria.				
Ostræa falcata, Morton = O. larva Lam.	*			
Gryphæa vesicularis, Lam	*	......	*	*
G " " *var.* navia, Roemer.	*	......	*	
Exogyra costata, Say	*			
Amusium simplicum, Con	*			
Camptonectes Burlingtonensis, Gabb	*			
Neithea quinquescostata, Sow	*	......	*	
Dianchora echinata, Morton	*			
Plicatula urticosa, Morton	*			
Radula pelagica, Mort. sp	*			
R " acutiradiata, Con	*			
Heteromyaria.				
Lithodomus affinis, Gabb. = L. Ripleyana, G.	......	*		
Inoceramus Barabini, Morton	*	......	......	*
I " Vanuxemi, Tuomey	*	......	......	*
I " Sagenensis, Owen	......	......	......	*
Pinna laqueata, Con	......	......	*	
Dimyaria.				
Nemodon Eufaulensis, Gabb	*			
Idonearca Tippana, Conrad	*			
I " vulgaris, Morton sp	*			
Cibota rostellata, Morton sp	*			
Nucula Slackiana, Gabb	......	......	*	
Nuculana longifrons, Conrad	*			
Trigonia Eufaulensis, Gabb	*			
Crassatella vadosa, Morton	*			
C " lintea, Con	*			
C " cuneata, Gabb	*			
Vetericardia octolirata, Gabb	*			
Cardium Eufaulensis, Conrad	*			
C. (Criocardium) multiradiatum, Gabb	*			
Leiopistha protexta, Con	*			
Isocardia Conradi, Gabb	*			

	Ala.	Miss.	Tex.	Dak.
LAMELLIBRANCHIATA : *Dimyaria.*—Continued.				
Veniella Conradi, Morton	*	......	*	*
Dosinia Gabbi, Whitf.	*			
Callista, Delawarensis G. = Venus Ripleyana, Gabb?	*			
Aphrodina Tippana, Conrad	......	*		
Cyprimeria densata, Conrad	*			
Tellimera eborea, Conrad	*			
Linearia metastriata, Conrad	*			
Ænona Eufaulensis, Conrad	*			
Valeda lintea, Conrad	*			
Leptosolen biplicata, Conrad	*	*		
Legumen ellipticum, Conrad	*			
L " planulatum, Con	*			
Clavagella armata, Morton	*			
Teredo tibialis, Morton	......	......	*	
GASTEROPODA :				
Pyropsis trachyformis, Tuomey	*			
P " Reileyi, W.	*			
P " octolirata, Conrad	*			
P "? obesa, W.	*			
P " (Rapa?) Corrine, W.	*			
Pyrifusus cuneus, W	*			
? P " Mullicaensis, W?	*			
Odontofusus medians, W.	*			
Volutoderma Gabbana, W.	*			
? V " mucronata, Gabb	*			
Volutomorpha Conradi, Gabb.	*			
V " Abbotti, Gabb.	*			
V " Kanei, Gabb	*			
Turbinopsis major, W.	*			
Cithara crosswickensis, W	*			
? C " Mullicaensis, W.	*			
Anchura pennata, Morton	*			
Rostellaria? Hebe, W.	*			
Natica abyssina, Morton	*			
Gyrodes petrosa, Morton	*			
Morea cancellata, Conrad	......	*		
Amauropsis Meekana, W	*			
Margarita abyssina, Gabb	*			
Delphinula lapidosa, Morton	*			
Xenophora leprosa, Mort. sp	*			
Scalaria Sillimani, Morton	*			

	Ala.	Miss.	Tex.	Dak.
GASTEROPODA.—Continued.				
Turritella vertebroides, Morton	*			
T " granulicostata, Gabb. = T. planilateralis, Con.	*			
T " encrinoides, Morton	*			
CEPHALOPODA:				
Ammonites complexus, Hall & Meek				*
A " dento-carinatus, Roemer			*	
A " (Placenti.) lobatus, Tuomey		*		
A " (") placenta, Morton				*
Scaphites Conradi, Morton	*			
S " iris, Conrad		*		
Baculites aspera, Morton	*	*		
B " ovatus, Morton	*			

NOTE.—*On account of the delay by the lithographers in printing the plates, the date of issue should be April instead of March. Author's copies of Articles VI. and VII. were distributed March 22d. R. P. W.*

ARTICLE IX.—*Preliminary Descriptions of two apparently New Species of the Genus Hesperomys from Florida.*—By FRANK M. CHAPMAN.

Hesperomys floridanus, sp. nov.

Type, and only specimen, No. 1812, ♀ ad., Am. Mus. Nat. Hist. Collected by J. P. H. Bell, at Gainesville, Florida, October, 1888.

Description of Type.—Above dark brownish gray slightly mixed with tawny; below white, including the lower border of the cheeks and the sides of the nose. Sides clear tawny, fading insensibly into the color of the back, but sharply defined at its junction with the white of the belly. Fore feet and legs, hind feet and inner surface of the hind legs, white. Tail distinctly bicolor, sparsely hairy, the annuli showing distinctly. Feet 5-tuberculate.

Measurements.—This specimen was collected by Mr. Bell while a refugee from the fever epidemic of 1888, under circumstances which prevented measurements being taken from the fresh specimen ; and the following measurements, therefore, are taken from the dried skin : tip of nose to base of tail, 117 mm.; tail to one hundred and sixth annulation (balance missing), 44.5 mm.; hind foot, 24 mm.; ear : height from anterior base, 18 mm.; from crown, 15 mm.; greatest width, 11.5 mm.

Hesperomys niveiventris, sp. nov.

Type, No. $\frac{1762}{1042}$, ♂ ad., Collection Am. Mus. Nat. Hist. Collected by Frank M. Chapman on the East Peninsula, opposite Micco, Brevard County, Florida, March 3, 1889.

Description of Type.—Above very pale tawny gray with a somewhat darker median dorsal area, and clearer tawny about the face and base of tail ; below, including the feet and legs, nose and lower half of the cheeks, pure snowy white, the hairs, except at their junction with the color of the back, *white to the base.* Tail bicolor ; feet 5-tuberculate.

Measurements.—From the fresh specimen : total length, 155 mm.; tail, 60 mm. From the skin : hind foot, 19 mm.; ear : height at anterior base, 13.5 mm.; height from crown, 9.5 mm.; greatest width, 9.5 mm.

[*June*, 1889.]

ARTICLE X.—*Description of a new Subspecies of the Genus Sigmodon from Southern Florida.* By FRANK M. CHAPMAN.

Sigmodon hispidus littoralis, subsp. nov.

Type, No. $\frac{1837}{1110}$, ♀ ad., Collection Am. Mus. Nat. Hist. Collected by Frank M. Chapman on the East Peninsula, opposite Micco, Brevard County, Florida.

Description of Type.—Similar to *Sigmodon hispidus* Say & Ord, but much darker, the pelage being finely mixed with gray or pale brownish gray, instead of heavily lined with yellowish brown, the underparts dusky brownish gray, not yellowish white, the tail less distinctly bicolor.

Measurements.—From the fresh specimen: length, 274 mm.; tail, 105 mm. From the skin: hind foot, 31 mm.; ear, from crown, 12 mm.

Habitat.—Probably confined to the coasts of Southern Florida.

Remarks.—This new form differs so widely from North Carolina specimens of *Sigmodon hispidus* as to suggest specific distinctness; specimens from Gainesville, Florida, however, while clearly referable to the more northern form, show an approach to *littoralis*, and it is probable that the two forms will be found to completely intergrade.

Say and Ord's type of *Sigmodon hispidus*, taken on the St. Johns River, Florida, both from the locality and description, belongs to the northern form to which the name *hispidus* should be restricted.

No. 1460, an example of *littoralis* from Pine Island, in Charlotte Harbor, shows an even greater differentiation than the East Peninsula specimens, in the grayish lining of the upper parts and almost entire absence of brown.

ARTICLE XI.—*On the Habits of the Round-tailed Muskrat (Neofiber alleni True).* By FRANK M. CHAPMAN.

Neofiber alleni was briefly described by True in *Science*,* this preliminary description being followed by one of a more detailed character,† while later the same author included the species in his provisional list of North and Central American mammals.‡

These references, so far as I am aware, comprise all that has been published concerning this interesting mammal, whose habits and distribution have since been a matter of uncertain speculation. It is with sincere pleasure, therefore, that I am able to present additional information on this subject, which, it is to be hoped, will eventually lead to a thorough knowledge of this animal's life-history and habitat.

Georgiana, the place of the original capture by Dr. Wittfeld, is situated near the southern extremity of Merritt's Island in Eastern Florida, while the region now under consideration is nearly thirty miles further south on the East Peninsula, opposite Micco, at "Oak Lodge," the residence of Mr. C. F. Latham, a locality visited during portions of February and March, 1889, with the probable capture of *Neofiber* in view.

At this point the peninsula is about half a mile in width, a fringe of outlying mangrove-bordered islands on the west shore increasing the distance from river to ocean to somewhat more than a mile. The growth on the peninsula proper is very dense and composed largely of cabbage palms and oaks, the sea coast being bordered by an unbroken line of saw-palmetto several hundred yards in width, while on the river side frequent inroads are made by large savannas caused by inflowing streams. On these savannas, which occur also in the interior of many of the islands before mentioned, *Neofiber alleni* may be found in abundance.

The growth here is largely restricted to the heavy fringe of red§ and black‖ mangrove and "sedge"¶ facing the water, with occasional black or "yellow mangroves" dotting the surface of the savannas irregularly throughout their entire extent. Though subject to frequent inundation the water rarely or never rises above the tangled mass of grass, which, at the time of my visit, was from two to three feet high and densely matted underfoot.

---

* Science, IV, No. 75, 1884, p. 34.

† Proc. U. S. Nat. Mus., VII, 1884, p. 170.

‡ *Ibid.*, p. 596.

§ Rhizophora mangle.

‖ Avicennia nitida.

¶ Borrichia frutescens.

Of this grass *Neofiber* constructs a more or less woven nest, placing it frequently in hollow trunks or stumps of the black mangrove, occasionally in the open savanna, but generally about the bases of the "yellow mangrove," when in some cases, probably because they interfered in its construction, an intruding limb of the supporting bush was gnawed off at its base ; the largest one treated in this manner which I observed measured about one inch in diameter.

Under the first-mentioned conditions the nest merely fills, without regard to form, the cavity in which it is placed, but situated in the open or about the "yellow mangroves," it has a more or less pyriform appearance, averages from ten to eighteen inches in height, and is nearly as large at its greatest diameter. In favorable localities it was not unusual to see ten or twelve of these nests from the same standpoint; probably, however, only a small percentage of them were occupied. Several of the many examined had openings above, perhaps the work of some marauding mammal, for with these exceptions the openings were restricted to two, invariably situated on opposite sides of the nest, leading from the single chamber within to the underground passages which are constructed just beneath the thick mat of grass, and ramify in every direction. Not infrequently they come to the surface, a small flattened pile of mud marking the exits, when the runway is sometimes continued above ground and may proceed to a neighboring pond. Here *Neofiber* finds what apparently is a favorite food, in a species of succulent grass, which grows to a height of three or four feet in water half as deep. To procure the younger and more tender portions of this grass he constructs a platform of the larger stalks, on which he sits and feeds at leisure on the shoots growing in his immediate vicinity, and the size of this supporting platform depends on the abundance of food growing near it, the harder, rejected portions of grass constantly adding to its bulk. The largest one observed measured about twelve by ten inches, and rested on the bottom in water one foot deep.

Occasionally, during a period of high water, an overhanging and submerged limb of black mangrove will furnish a basal support for this stand, which the receding water leaves suspended. In one instance the cigar-shaped shoot of a red mangrove, from which the bark had been partially gnawed, was found on a feeding platform, while the stomachs of the specimens examined contained only vegetable matter, which we may presume largely if not entirely composes the food of this species.

Though I was frequently on the water at night, both with and without a head-light, *Neofiber* was not once observed swimming, as we so often find the muskrat,—an observation confirmed by the experience of Mr. Latham, who has passed several years in the locality.

It is probable that *Neofiber* is much less aquatic than the last named species, a fact which would largely account for the differences observed in their habits.

That *Neofiber* is quite at home in the water, however, was clearly shown by the actions of a captured individual, which, placed in a tub of water, swam and dived readily ; in swimming using the tail in a peculiar gyratory manner, the tip describing circles.

The unusually high water during my stay greatly interfered with successful trapping, and I succeeded in catching but four of these much desired mammals, one of which left me only a foot and leg as a souvenir ; the remaining three are now in the American Museum Collection, and are included in the appended tables presented for comparison with Mr. True's measurements, which are given in the fourth column of the tables.

Remarks on Specimens.—No. 1841, an adult male, differs from the description of the type in having the underparts silvery white with only a faint rufescent tinge and a circular sooty mark covering the chin.

No. 1842, an immature female in a pelage before undescribed, is deep plumbeous above, the hairs concolor to their base, grayish white below, resembling thus the young of *Fiber zibethicus ;* the belly, however, is whiter and the rufous tinge showing faintly in *F. zibethicus* is entirely wanting in *N. alleni.* The skull agrees with that of young *F. zibethicus* in having the interorbital bridge flat and not produced into a ridge as it is in adult skulls of both species.

No. 1843, an adult male, agrees very closely with the description of the type, though I am unable to account for the apparent discrepancy in the length of the nasals shown in the measurements of both this and the two preceding specimens.

MEASUREMENTS OF SKINS.*

	No. $\frac{1841}{1114}$, ♂ ad. Mch. 8, 1889.	No. $\frac{1842}{1115}$, ♀ im. Mch. 19, 1889.	No. $\frac{1843}{1116}$, ♂ ad. Mch. 26, 1889.	Type. Sex not stated.
Total length	350	266	......	......
Tail	129	103	130	126
Hind foot (without claws)	39	35	38	39
Middle toe of fore foot (without claw)	9	7	......	9
Middle toe of hind foot (without claw)	10	9	9	10
Longest claw of fore foot	6	5	......	5
Longest claw of hind foot	7	6	7	6

* Measurements in millimeters.

MEASUREMENTS OF SKULLS.*

	No. $\frac{1841}{1114}$, ♂ ad. Mch. 8, 1888.	No. $\frac{1842}{1115}$, ♀ im. Mch. 19, 1888.	No. $\frac{1843}{1116}$, ♂ ad. Mch. 26, 1889.	Type. Sex not Stated.
Total length	48	43	47	47
Greatest width	30	25	29	29
Length of nasals	9	7	9	12
Length of tooth row	11	10	12	11
Front edge of first molar to posterior margin of incisors	16	14	15	16
Greatest width of muzzle	8	7	7	7
Width of interorbital bridge	5	6	6	5
Centre of occipital crest to line of hinder margin of orbits	18	19	19	19

* Measurements in millimeters.

ARTICLE XII.—*On Cyclorhis viridis (Vieill.) and its near Allies, with Remarks on other Species of the Genus Cyclorhis.* By J. A. ALLEN.

In the Smith Collection of Brazilian birds, recently purchased by the American Museum of Natural History, is a series of 46 specimens of *Cyclorhis*, all collected at Chapada, in the Province of Matto Grosso, as follows: 5 in January, 3 in February, 7 in March, 9 in April, 4 in May, 2 in June, 6 in July, 3 in August, 0 in September, 2 in October, 2 in November, and 3 in December. These specimens, while presenting great variations in respect to coloration, size, and particularly in the size and color of the bill, are obviously referable to a single species, the two extremes of the series being completely connected by intermediate phases. While there is evidently a wide range of individual variation, in coloration as well as in size and the character of the bill, much of the very great variation in plumage is unquestionably due to season and age. October and April specimens present the extremes of variation in respect to coloration, the former representing the adult breeding birds, the latter the freshly moulted birds. There is no apparent difference in the sexes, except that the females are found on measurement to average slightly smaller than the males.

No. 31,205, ♂, October 30, 1882, has the whole head, except the rufous superciliary stripes and lores, nearly pure gray, deepest and purest on the hind neck, a little lighter on the sides of the head, and still lighter on the chin, with a barely perceptible tinge of olivaceous brown over the top of the head,—merely a faint wash, most distinct on the hind head. Rest of the upper parts clear olive green. Jugulum and sides of breast greenish yellow; lower breast and abdomen grayish white, with a faint buffy tinge, deeper posteriorly. Upper mandible reddish flesh-color; lower mandible black basally for two-thirds of its length, gonys and tip lighter, like the upper mandible. Feet dusky horn color. This doubtless represents the fully adult bird in the breeding season.

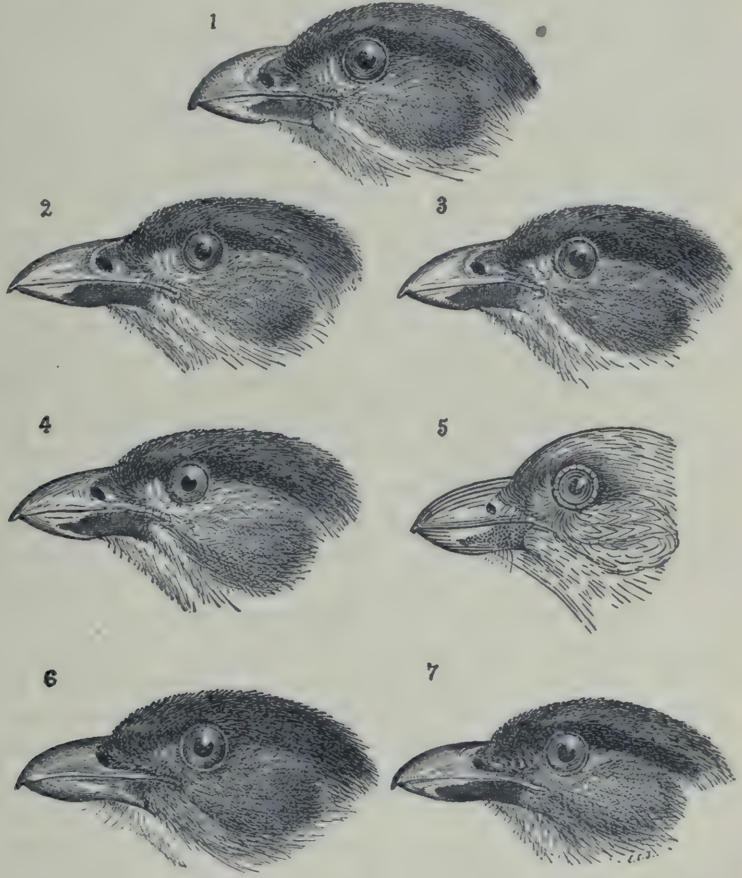
No. 31,180, ♀, March 15th, 1883, has the whole top of the head and nape uniform deep olivaceous brown; lores and superciliaries rufous; sides of head pale ashy; chin ashy white; upper parts yellowish green, much lighter and more yellowish than in No. 31,205; jugulum and sides of breast rather bright greenish yellow, the yellow many shades deeper and brighter than in No. 31,205; rest of the lower parts deep buff, a little lighter on the middle of the abdomen. Bill nearly uniform reddish horn color, without a dark spot at base of the lower mandible. This may be taken as representing the young of the year, with which many of the February, March, and April specimens essentially agree, although usually the basal black spot on the lower mandible is well defined.

Between these two extremes is every grade of variation, with, however, very few with the head as gray as in No. 31,205, or as brown as in No. 31,180. The top of the head varies in different specimens from strong reddish brown to olive brown, with the gray beneath the surface showing through on the slightest displacement of the feathers.

The specimens with nearly pure gray heads, deep olive green upper parts, minimum amount of buffy below, and the yellow on the breast most greenish, are sexed and dated as follows: ♂, Oct. 30; ♂, Nov. 22; ♀, Jan. 18; ♂, April 26; ♀, May 23. Other April and May specimens differ from the foregoing mainly in the head being a little browner, and the yellow of the jugular region a little brighter. Many July specimens are scarcely different from these last, while others are much more buffy below and browner on the head. The specimens having the brownest heads and the strongest suffusion below are sexed and dated as follows: ♀, Feb. 1; ♂, Feb. 13; ♀, March 15; ♂, April 8. Some of the May, June, and July specimens present nearly the same features, so that more or less strongly suffused specimens occur from February to July.

In respect to other variations, the wing ranges in length in a series of 25 males from 71.63 mm. (2.82 in.) to 88.9 mm. (3.05 in.), and in 10 females from 73.15 mm. (2.88 in.) to 77.21 mm. (3.04 in.); the tail in the two series varies from 63.5 mm. (2.50 in.) to 69.6 mm. (2.74 in.) in the males, and from 63.5 mm. (2.50 in.) to 68.07 mm. (2.68 in.) in the females; the length of the culmen, in the same two series, from 14.48 mm. (.57 in.) to 16.51 mm. (.65 in.) in the males, and from 14.73 mm. (.58 in.) to 16.51 mm. (.62 in.) in the females; and the depth of the bill from 8.38 mm. (.33 in.)

to 10.16 mm. (.40 in.) in the males, and from 8.64 mm. (.34 in.) to 10.67 mm. (.42 in.) in the females. The wide variation in the form and size of the bill is shown in the accompanying figures (Figs. 1–3).



EXPLANATION OF FIGURES.

Figs. 1–5, *Cyclorhis viridis.*—Fig. 1, No. 31,205, ♂, Chapada, Oct. 30; Fig. 2, No. 31,193, ♀, Chapada, May 23; Fig. 3, No. 31,201, ♂, Chapada, Aug.; Fig. 4 (No. 179, Coll. Lawrence), Bahia, without date or sex (type of *Cyclorhis cearensis* Baird); Fig. 5, *C. altirostris* Sal. (copied from Ibis, 1887, p. 320, fig. 3).

Fig. 6, *Cyclorhis ochrocephala.* No. 30,993, Mus. Comp. Zoölogy, ♀ Concepcion del Uruguay, Dec. 7, Coll. W. B. Barrows.

Fig. 7, *Cyclorhis guianensis.* (No. 178, Coll. Lawrence), ♂, Cayenne.

Figures all nat. size, from nature, by E. E. Thompson.

In respect to the color of the bill, one specimen has the bill entirely blackish; in another the upper mandible is wholly dusky; two have the bill wholly reddish flesh-color, without trace of black at the base of the lower mandible, while a third shows the faintest trace of a basal black spot.

As to what name this variable species should bear, the first difficulty in the way was to ascertain to what kind of a bird was given the name *Tanagra viridis* by Vieillot (Ency. Méth., II, 1823, p. 793, based on the *Habia verde* of Azara), this name having been applied to two very distinct species by even recent authors, one of these species being unquestionably the species here in hand. Other names certainly applicable are *Cyclorhis cearensis* Baird (1866); *C. wiedii* Pelzeln (1868); *C. albiventris* Sclater and Salvin (1873); and *C. altirostris* Salvin (1880). Dr. Hans Gadow's *C. viridis* (Cat. Bds. Brit. Mus., VIII, p. 318, exc. synonyms) is *C. ochrocephala* Tsch., but the *C. viridis* of Sclater (1858), of Baird, Berlepsch, and most recent authors is a bird with the rufous superciliaries extending to the nape and with a black spot at the base of the lower mandible, features absent in *C. ochrocephala.* After a thorough examination of the points at issue I quite agree with Count Berlepsch (Ibis, 1888, p. 89) that the *C. viridis* (Vieill.) is the same as the bird named *C. altirostris* by Mr. Salvin (=*C. viridis* Scl., P. Z. S., 1858, p. 448), which name (*altirostris*) Dr. Sclater prefers to adopt in place of *C. viridis* auct. plur., because the latter name has of late, by some authors, been applied to *C. ochrocephala.* (See Ibis, 1887, p. 223, and Argent. Orn., I, 1888, p. 24.)

I have also been led to the conclusion, after the examination of a large amount of material in addition to that in the Smith Collection, that a number of still currently recognized species have been based on seasonal and individual variations of the bird properly to be called *C. viridis.* As expressing my views I present the following synonymy:

Cyclorhis viridis (*Vieill.*).

Saltator viridis Vieill., Ency. Méth., II, 1823, 793 (based on the *Habia verde* of Azara).

Cyclorhis viridis Burm., Thiere Bras., III, 1856, 107 (in part only); Sclater, P. Z. S., 1858, 448; Baird, Rev. Am. Bds., 1866, 392; Berlepsch, Ibis, 1888, 91.

Cyclorhis cearensis Baird, Rev. Am. Bds., 1866, p. 391 (in text—specimens examined); Berlepsch, Ibis, 1888, p. 91 (specimens examined).

Cyclorhis wiedii Pelzeln, Orn. Bras., ii, 1869, pp. 74, 137, 138; Gadow, Cat. Bds. Brit. Mus., VIII, 1885, p. 318 (in text); Berlepsch, Zeitsch. f. ges. Orn., 1885, p. — (p. 20 of separate); *ib.*, Ibis, 1888, pp. 88, 91.

Cyclorhis albiventris Scl. & Salv., Nom. Av. Neotr., 1873, p. 156 (type examined); Gadow, Cat. Bds. Brit. Mus., VIII, 1883, p. 87; Sclater, Ibis, 1887, p. 323; Berlepsch, Ibis, 1888, pp. 86, 91.

Cyclorhis altirostris Salvin, Ibis, 1880, p. 352; Gadow, Cat. Bds. Brit. Mus., VIII, 1883, p. 319; Sclater, Ibis, 1887, p. 323; *ib.*, Argent. Orn., I, 1888, p. 24, pl. iii, fig. 2. (*Cf.* Berlepsch, Ibis, 1888, p. 89.)

Thamnophilus guianensis Maximilian, Beitr. zur Naturg. Bras., III, ii, 1831, p. 1016 (specimens examined).

Laniagra guianensis d'Orb., Voy. dans. l'Amer. Mérid., Ois., 1835–44, p. 160 (excl. synonyms and part of the text).

Habitat.—Middle, Eastern, and Southern Brazil, Bolivia, Paraguay, and the Argentine Republic.

Cyclorhis ochrocephala *Tsch.*

Cyclarhis ochrocephala Tsch., Wiegm. Arch. f. Naturgsch., 1845, i, p. 362 (diagnosis; syn. and remarks in part only).

Cyclorhis ochrocephala Pelzeln, Orn. Bras., ii, 1869, pp. 73, 138; Sclater, P. Z. S., 1858, p. 448; *ib.*, Ibis, 1887, p. 323; *ib.*, Argent. Orn., I, 1888, p. 23, pl. iii, fig. 1; Berlepsch, Zeitsch. f. ges. Orn., 1885, p.— (p. 20 of separate); *ib.*, Ibis, 1888, pp. 87, 91.

"*Cyclarius guianensis* Swain., Bds. Brazil, 1834–41, pl. 58" (*apud* Baird).

Cyclorhis viridis Cab., Mus. Hein., I, 1850–51, p. 64 (syn. in part only); Gadow, Cat. Bds. Brit. Mus., VIII, 1883, p. 318 (excl. synonyms); Barrows, Bull. Nutt. Orn. Club, VIII, 1883, p. 88 (specimens examined).

Habitat. — Southeastern Brazil and southward (Argentine Republic).

Cyclorhis viridis may be easily distinguished from *C. ochrocephala*, with which it has been repeatedly confused, by the continuation of the rufous superciliaries to the nape, by the deeper bill, with a blackish spot at the base of the lower mandible, and in the more or less grayish color of the cap in adult birds, in which it is sometimes nearly pure gray. In *C. ochrocephala* the rufous superciliaries do not extend beyond the posterior corner of the eye, the bill is nearly uniform reddish flesh-color (somewhat dusky in young birds) and less thickened vertically, and the cap seems to be always brownish, varying from deep rufous brown to paler olivaceous brown, much as in immature or freshly moulted examples of *C. viridis*.

Cyclorhis viridis differs from *C. guianensis* (Gm.), with which it has also been repeatedly confounded, especially by the earlier writers, by its larger size, much stouter bill, buffy suffusion below, paler and narrower superciliaries, and the less pure gray of the cap. Typical specimens of *C. guianensis* seem characterized (as compared with *C. viridis*) by their small size, very small bills, the pure gray of the cap and hind neck, and the pure gray of the middle of the breast, upper abdomen, and flanks. It is possible that a large series would, especially in immature birds, show color variations in the direction of *C. viridis*, though its nearest ally is doubtless *C. flavipectus*, to which it is closely related, and from which it differs mainly in having much less yellow on the breast.

Mr. Barrows's *C. viridis* (l. c.), wrongly determined some years since as this species by myself, is the true *C. ochrocephala*, and is hence incorrectly placed by Mr. Sclater (Argent. Orn., I, p. 24) under his *C. altirostris*.

The specimens on which the late Professor Baird based his provisional name *C. cearensis* prove, on comparison of two of his three specimens mentioned under this name, to be in no way distinguishable from a number of specimens in the Smith series from Matto Grosso, agreeing closely with what may be fairly termed average specimens (see Fig. 4). Two other specimens identified as *C. cearensis* Bd. by Berlepsch are strictly similar.

The description of *C. weidii* Pelzeln agrees satisfactorily with the specimens in which the lower mandible lacks the basal dusky spot, with the cap olivaceous brown and the lower parts strongly buffy,—in other words, with immature birds. Pelzeln cites under this species "*Thamnophilus guianensis* Pr. Neuw.," and "*? Cyclorhis viridis* Baird.... Parana" as synonyms, and gives "Bahia (Sellow); Rio Parana (Natt. Baird ?), Goiaz, Cuyaba, Engenho do Gama (Natterer)" as localities. Two of Maximilian's specimens are before me, one of which has the usual black spot on the lower mandible, while the other lacks it, and is otherwise obviously a young bird. Baird's Parana specimen, also before me, has the whole basal portion of the bill dusky, without a distinct black area on the lower mandible, and is also a young bird, corresponding with several immature specimens in the Chapada series. Count Berlepsch, in maintaining *C. wiedii*, describes one of Pelzeln's Nattererian specimens from Engenho do Gama, Matto Grosso (a locality not far from Chapada), his description showing beyond question, to my mind, that the specimen was young, and in every way similar to Chapada "birds of the year." Berlepsch further adds that Baird's Parana specimen of *C. viridis* "evidently belongs to *C. wiedii*." While the black spot on the lower mandible is not always absent in young specimens of *C. viridis* (and it may be wanting occasionally in adults), I am convinced that *C. wiedii* is based, as interpreted by Count Berlepsch, on such exceptional examples. As is well known, the black mandibular spot is often lacking in other species in which, as a rule, it is present, as happens in both *C. flavipectus* and *C. flaviventris*.

Authentic specimens of *C. albiventris* Scl. & Salv. (some of them labeled in Mr. Sclater's handwriting, and including one marked "*Cyclorhis albiventris*, sp. nov. iii. Bahia, Brazil, Wucherer. Type. Ex. Mus. O. S. & F. D. G.") agree perfectly with several of the paler bellied examples in the Smith series and are obviously not separable.

The *C. altirostris* Salvin has already been referred to the true *C. viridis* by Count Berlepsch, and the correctness of the reference has been admitted by Dr. Sclater to be "perhaps correct," he prefering the name *altirostris*, however, on the ground that *viridis* has been frequently used for *C. ochrocephala*. It seems to agree with the thicker-billed brown-headed birds in the Smith series. (Compare, for example, in respect to the bill, Figs. 1 and 4, p. 125.)

Mr. Sclater, in his recent review of this genus (Ibis, 1887, pp. 320–324) places much importance upon the size and form of the bill as a diagnostic character, making this the basis of his synoptical key to the species. That he has placed too much stress upon this variable feature has already been pointed out by Count Berlepsch (Ibis, 1888, p. 84), who calls attention to the fact that "in this organ much individual difference is observable"—a statement emphatically borne out by the series of *C. viridis* forming the basis of these remarks, and as is indicated by the accompanying figures and measurements. One of the largest bills is shown in Fig. 1; a longer, shallower bill is shown in Fig. 2; while in Fig. 3 is shown one of the smallest bills of the series. The gradation, however, of one form into the other is complete and by almost imperceptible stages. The average form would fall about midway between Figs. 1 and 3.

Having in hand, through the kindness of Mr. Robert Ridgway, Curator of Birds in the U. S. National Museum, the National Museum series of the genus *Cyclorhis*, including Mr. Ridgway's types of his *C. flaviventris yucatanensis* and *C. insularis*, as well as what purport to be types of *C. flavipectus* Scl. and *C. albiventris* Scl. & Salv., two of the three specimens for which Baird proposed the name *C. cearensis*, and two specimens labeled "*C. albiventris* Scl. & Salv. = *cearensis* Bd" by Count Berlepsch, and much other authentic material; and also, through the kindness of Mr. William Brewster, Curator of Birds at the Cambridge Museum of Comparative Zoölogy, the Cambridge Museum series, making, with the large series of the American Museum of Natural History, 123 specimens, and representing all the species of the genus except *C. atrirostris* Scl., I venture to make a few observations on other species of the genus.

Cyclorhis flavipectus.—As Count Berlepsch has pointed out (Ibis, 1888, p. 85), *C. flavipectus* from Bogota differs from specimens from Trinidad and Venezuela, in having the under parts of a "much purer and deeper golden yellow." I have before me 10 specimens of *C. flavipectus* from Trinidad, which form a very uniform series, with the yellow of the under parts of a decidedly greenish cast, thus contrasting markedly with a series of specimens from Colombia, in which the yellow of the lower parts is not only much deeper and purer, but generally more extended along the flanks, reaching the sides of the crissum, and in some specimens slightly tinging the lower tail-coverts. *C. flaviventris* was originally described by Sclater as "*Hab.* In ins. Trinit., Venezuela; et rep. Nov. Grenad." He also says: "Of the present bird I have examples from Trinidad, from Venezuela collected by Mr. Aug. Sallé between La Guara and Caraccas, from S. Martha received from M. Verreaux, and from Bogota collections" (P. Z. S., 1858, p. 448). Fortunately among the specimens from the U. S. National Museum (No. 32,719) is the original S. Martha specimen from the Verreaux Brothers, labeled with the well-known "Maison Verreaux" label, "*Cycloris flavipectus* Sclat."...."S$^{\underline{ta}}$ Marthe, N$^{\underline{lle}}$ Grenade," with "Type" indorsed on the back of the label. With this specimen three others from Bogota and one from Carthagena agree. To this interior or Colombian form I would hence restrict the name *flavipectus*, and designate the form from Trinidad, and possibly the adjoining Venezuelan coast, as *C. flavipectus trinitatis*, subsp. nov., should the Trinidad race seem worthy of recognition.

Cyclorhis flavipectus subflavescens.—This form, though nearest related to the Colombian race of *flavipectus*, differs from it in being larger, in the more extended area of yellow below and its darker, duller, somewhat greenish shade, which nearly resembles the yellow of the lower parts of *C. flaviventris yucatanensis*. It thus varies, both in size and color, towards *C. flaviventris*, from which it differs in being somewhat smaller, with a more or less broad area of whitish on the belly, and the dingy green shade of the yellow of the lower parts. Some examples of *subflavescens* differ from small specimens of *C. flaviventris* mainly through the whitish abdominal area present in the former.

Cyclorhis flaviventris.—The series of specimens I refer to *C. flaviventris* includes 10 from Orizaba, 1 from Tehuantepec, 4 from Guatemala, and 3 from Southern Yucatan. As a whole they are very uniform in respect to the yellow of the lower parts, though in some of the Guatemalan and Yucatan examples the yellow is perceptibly paler on the lower abdomen and crissum.

Cyclorhis flaviventris yucatanensis.—In the series before me are 4 specimens referable to Mr. Ridgway's subspecies *yucatanensis*, including the type (No. 37,917) collected at Merida by Schott, and two collected by Gaumer at the same place, and another Gaumer specimen from Temax. These differ from true *flaviventris* in the clearer gray of the pileum and nape, the much paler tint of the superciliaries, the much duller, grayer shade of the green of the upper parts, and the much less intense yellow of the lower parts, as so clearly pointed out by Mr. Ridgway (Proc. U. S. Nat. Mus., 1886, p. 519). This well-marked form will in all probability prove to be restricted to the northern portion of Yucatan, as specimens from Southern Yucatan prove to be not appreciably different from Guatemalan examples of true *flaviventris*.

Cyclorhis insularis.—This species is represented by the two specimens from Cozumel Island described by Mr. Ridgway, one of which (No. 102,659) is the type of the species. This specimen presents a singular combination of characters, the upper parts being of the same dull grayish green seen in *C. flaviventris yucatanensis*, while the lower parts agree closely, as Mr. Ridgway has pointed out (Proc. U. S. Nat. Mus., 1886, p. 566), with the same parts in average examples of *C. ochrocephala*; and the cap is of the same color in both. But here the resemblance with the last named species ceases, *C. insularis* having the lower mandible black for the greater part of its length, and the broad rufous superciliaries continued to the nape. In respect to the color of the *lower parts* (*only*), the agreement is almost perfect with typical specimens of *C. guianensis*, including the greenish yellow of the jugular region and the clear whitish gray of the breast and the rest of the lower parts. But this is the only close resemblance of *C. insularis* to *C. guianensis*, the green of the back being of a very different shade in the two, while *insularis* is nearly twice the size of *guianensis*. If the type represents the prevailing form of *Cyclorhis* at Cozumel Island, its position as a " good species " can scarcely be questioned. The other Cozumel specimen, described by Mr. Ridgway in his account of *C. insularis* (l. c.) as differing in important details from the type, I should, however, refer almost unhesitatingly to the form Mr. Ridgway has since described as *C. flaviventris yucatanensis*, were it not for the broad whitish area covering the lower belly and crissum. In respect to the lower parts this specimen closely resembles Costa Rican specimens of *C. flavipectus subflavescens*, both in the dull greenish yellow of the general under parts and the white abdomino-crissal area. The difference between this specimen and the type of *C. insularis* consists in the extension of the greenish yellow of the jugular region over the breast and upper abdomen and the corresponding restriction of the white area to the lower abdomen and crissum. Its affinities are, however, much nearer the type of *C. insularis* than with *C. flaviventris yucatanensis*, or any other hitherto described form.

Cyclorhis guianensis.—As shown by the synonymy already given (pp. 126, 127), *C. guianensis* has repeatedly been confused with *C. viridis* and *C. ochrocephala*. The specimens of *Cyclorhis* before me, most of them labeled many years ago by various ornithologists of high standing, indicate still further the extent of this confusion. Of 16 specimens labeled *Cyclorhis guianensis* only 4 are referable to this species, 7 being *C. viridis* and 5 *C. ochrocephala!* Judging from the material I have been able to examine, true *C. guianensis* is a rare bird in collections—certainly so in American ones. Of the four before me one (Lawrence Collection) is from Cayenne, and another is from Para (U. S. Nat. Mus. No. 112,264, ex C. B. Riker), and two from Santarem (Coll. C. B. Riker). The Cayenne specimen is the type of Baird's description of this species (Rev. Am. Bds., p. 389), and the specimen on which Fig. 5 of this paper is based. The bill is of the elongated slender form for this genus, and the superciliaries are broad and nearly as deep rufous as in *C. virenticeps*. In the Para specimen the bill is thicker and of the *C. viridis* form, and the superciliaries are very narrow and pale. In other respects—in size and coloration—it agrees with the Cayenne bird. On the other hand it almost exactly agrees with small-billed, blue-headed, light-bellied specimens of *C. viridis* from Chapada (e. g., Nos. 31,206, 31,183, 31,189), having the bill quite as large and of the same form, with the coloration the same throughout, except lacking the very faint buffy tinge of the lower parts perceptible in the Chapada birds. It hence agrees with the pale-bellied phase of *viridis* called "*albiventris*," except that the cap is purer gray, and that all trace of buff is lacking below. It is suggestive that the label shows the bird to have been first named "*C. albiventris?*" by Mr. Ridgway, and renamed "*C. guianensis* (Gm.)," with which later determination I agree, although were the specimen labeled Chapada instead of Para I should unhesitatingly pass it as *C. viridis.*

The point of all this is the evident probability that eventually the Cayenne form known as *C. guianensis* will be found to grade into *C. viridis* though a paler race representing the species in Northwestern Brazil, from Ceara and Pernambuco, and perhaps further north, southward to Bahia, for which Baird's name *cearensis* (= *albiventris*) would be available.

In short, it seems probable that the whole group centering about *C. flavipectus*, including not only its several recognized subspecies but *C. guainensis* and *C. viridis*, and possibly also *C. flaviventris* (through its southern forms) will be found, when ample material for the study of the genus has been gathered, to imperceptibly blend.

My present impressions of the status, relationships, and distribution of the various forms of *Cyclorhis* may be summarized as follows:

1. *Cyclorhis flaviventris* Lafr. — Southern Mexico, Guatemala, and Southern Yucatan.

1*a*. *Cyclorhis flaviventris yucatanensis* Ridgw.—Northern Yucatan.

2. *Cyclorhis insularis* Ridgw.—Cozumel Island.

3. *Cyclorhis flavipectus* Scl.—Colombia and Venezuela (except northeastern coast region?).

3*a*. *Cyclorhis flavipectus trinitatis* Allen.—Island of Trinidad (and Venezuelan coast region?).

3*b*. *Cyclorhis flavipectus subflavescens* (Cab.).—Costa Rica.

4. *Cyclorhis guianensis* (Gm.).—Guiana, Cayenne, and Amazonia.

5. *Cyclorhis viridis* (Vieill.). — Northern Argentine Republic, Paraguay, and Eastern Brazil north to Amazonia.

6. *Cyclorhis ochrocephala* Tsch.—Southeastern Brazil and Agentine Republic.

7. *Cyclorhis virenticeps* Scl. — Western Ecuador and "Northwestern Peru."
8. *Cyclorhis contrerasi* Tacz.—Northern Peru.
9. *Cyclorhis nigrirostris* Lafr.—Colombia.
10. *Cyclorhis atrirostris* Scl.—Ecuador.

In conclusion I append the following key to the species of *Cyclorhis.*

A. Superciliary stripes not continued behind the eye.
  a. Bill (normally) uniform reddish brown ; cap brownish ochraceous. *C. ochrocephalus.*
  b. Bill black, base of lower mandible flesh-color; cap green. . *C. nigrirostris.*
B. Superciliary stripes extending to nape.
  a. Cap green ; sides of neck yellow, like the breast ; bill brown, base of lower mandible black... ....*C. virenticeps.*
  b. Cap green ; sides of neck greenish ; bill wholly black. . . . *C. atirostris.*
  c. Cap and sides of neck deep gray ; lower parts (except jugulum and sides) pure grayish white.........................*C. guianensis.*
  d. Cap chestnut, more or less mixed with green ; sides of neck yellowish green, like the breast..........................*C. contrerasi.*
  e. Cap pale ochraceous, varying to nearly pure gray.
    e^1 Lower parts wholly deep yellow.................*C. flaviventris.*
    e^2 Lower parts paler, duller yellow . . . . . *C. flaviventris yucatanensis.*
    e^3 Breast light golden yellow ; sides strongly washed with pure light yellow ; belly whitish...................... *C. flavipectus.*
    e^4 Breast and lower parts, except a small whitish ventral area, dull greenish yellow ....*C. flavipectus subflavescens.*
    e^5 Breast light greenish yellow ; sides washed with yellowish olivaceous ; broad abdominal area nearly pure white. *C. flavipectus trinitatis.*
    e^6 Yellow nearly confined to jugulum ; sides washed with greenish yellow ; rest of lower parts buffy white, varying from strong buff to nearly pure white ; cap often pure gray...........*C. viridis.*
    e^7 Similar to *C. viridis* but much larger, green above darker, belly purer grayish white.........................*C. insularis.*

Article XIII.—*Descriptions of New Species of South American Birds, with Remarks on various other little known Species.*

By J. A. Allen.

Thryothorus macrurus, sp. nov.

Similar in general coloration to *T. mysticalis*, but much larger, with a disproportionately longer and very differently colored tail. Type and only specimen, No. 35,342, Am. Mus. Nat. Hist. Vicinity of Bogota, Colombia.

Head and nape dark slaty brown, darker anteriorly, and with a slight olivaceous tinge posteriorly; whole back, with the wing-coverts and edging of the quills, bright reddish brown, slightly darker on the latter; tail blackish, the feathers edged externally with pale reddish brown (much paler than the color of the back) on the basal half, almost wholly blackish apically, the middle feathers coarsely barred with pale grayish rufous over about the middle third of their length, basally and apically the bars being obsolete; the outer feathers similarly barred on the basal half, the bars restricted to the outer vane and to the basal half or two-thirds of the feathers; inner vanes and apical half of the tail very faintly marked with irregular wavy blotches a little lighter than the ground color. Cheeks, throat, and broad superciliary stripes white, with a faint creamy tinge; ear-coverts black broadly streaked with white; distinct broad black malar streaks; breast and lower parts generally gray, deepest and purest over the jugular region, posteriorly faintly washed with pale brown, more strongly so on the flanks; lower tail-coverts pale buffy brown, very faintly and narrowly barred with dusky. Bill deep plumbeous; feet pale horn color.

Length (skin) 165.1 mm. (6.50 in.); wing, 73.7 mm. (2.90 in.); tail, 77 mm. (3.30 in.); culmen, 18.3 mm. (.72 in.); tarsus, 25.4 mm. (1.00 in.).

With the general colors of very pale specimens of *T. mysticalis*, this species has the tail colored and marked somewhat as in specimens *T. genibarbis* in which the tail-bars are reduced to a minimum, though in the present species they are more obsolete than in any of my large series (nearly 40 specimens) of *T. geni-*

barbis. The tail, however, is more than one-third longer than in the longest tailed examples of *T. mysticalis*, and the bird generally is much larger.

The single specimen came in a collection of Bogota birds recently purchased of Mr. J. M. Southwick, of Providence, R. I.

Thryothorus longipes, sp. nov.

Above, except the head, uniform brownish chestnut; head paler, fulvous brown, the feathers blackish below the surface; white superciliary stripes well marked, running from the nostrils to the nape, distinctly bordered above and below with black; lores and broad postocular spot black; conspicuous maxillary streaks black; throat grayish white, posteriorly buffy and indistinctly spotted with black; auriculars grayish, washed faintly with pale brown and finely streaked with black; lower parts rusty brown, very strong on the sides and lighter and slightly grayish centrally; lower tail-coverts deep rusty, entirely without spots or bars; wings black, the quills broadly edged externally with the color of the back, and internally with ochraceous; tail reddish brown, edged externally with rufous, rather lighter than the color of the back; *remiges and rectrices without any trace of cross-bars.* Bill blackish horn color, lower mandible a little lighter; feet brownish horn color.

Length (skin), 162.6 mm. (6.40 in.); wing, 74.9 mm. (2.95 in.); tail, 73.7 mm. (2.90 in.); tarsus, 31.8 mm. (1.25 in.); hind toe (with claw), 21.6 mm. (.85 in.); exposed culmen, 21.6 mm. (.85 in.).

Type, No. 35,495, Am. Mus. Nat. Hist., Ambato, Ecuador. Coll. M. A. Vascomez.

This species may be at once recognized by its large size, the entire absence of bars on either the wings or tail, and especially by its large feet. It has the size, and somewhat the general appearance of a *Cinnicerthia*, with the long bill and covered nostrils of a *Thryothorus*, with several species of which there is a general agreement in the pattern of the head-markings.

Besides the type—evidently a fully adult bird—is an immature specimen I refer to the same species. It differs from the type in being a little smaller, generally much lighter in color, and in showing only traces of the dusky and white markings of the head characteristic of the adult, the superciliaries being fulvous instead of white, and the loral, postocular, and malar stripes being simply faintly indicated by dusky. The throat is also buffy white instead of grayish white. It corresponds with the type just as a specimen of similar age of *T. coraya* corresponds with the adult of that species. The immature specimen (evidently not fully grown) measures as follows: Length (skin), 153.7 mm. (6.05 in.); wing, 68.6 mm. (2.70 in.); tail, 67.3 mm. (2.65 in.); tarsus, 30.5 mm. (1.20 in.); hind toe (with claw), 21.1 mm. (.83 in.); exposed culmen, 18.3 mm. (.72 in.).

These specimens came in a collection of birds—numbering 110 specimens, and containing several rarities—made at Ambato, Ecuador, by Sr. M. A. Vascomez, and recently purchased by the American Museum. Among the more interesting species were *Synallaxis unirufa*, *Geotrygon boucieri*, and *Osculatia sapphirina*.

NOTE ON **Thryothorus "mysticalis"** OF THE RUSBY COLLECTION.—When working up the Rusby Collection of Bolivian birds (see antea, p. 79) I had no satisfactorily authentic specimens of *T. mysticalis*, which have since been supplied by the kindness of Mr. Ridgway. The Rusby specimen referred to *T. mysticalis* is probably a large, very strongly-colored example of *T. genibarbis*, or else an undescribed form. It is much larger than ordinary *genibarbis*, with a darker head, the ear-coverts black streaked with white (instead of white streaked with black), upper parts much redder (quite as red as in some specimens of *mysticalis*), a much redder tail, with narrower and more numerous black bars, while the whole lower surface, except the throat and fore-breast, is deep fulvous, more continuous and many shades deeper than the most highly-colored specimens of *genibarbis* I have yet seen. It coming with a normal specimen of *T. genibarbis* made the case all the more puzzling. Besides the general differences in coloration, the tail is so strikingly different in color and markings as to almost preclude the reference of this specimen to *T. genibarbis*, where, however, it is now provisionally left. The specimen has the appearance a hybrid between *T. genibarbis* and *T. mysticalis* might be expected to present.

Porphyrospiza cærulescens (*Wied*).

? "*Emberiza cyanella* SPARRMAN, Mus. Carls., facs. ii, pll. 42, 43, 1787."

Tanagra cærulescens WIED, Beitr. zur Naturg. Bras., III, i, 1830, p. 541.

Cyanospiza cyanella PELZELN, Orn. Bras., iii, 1870, p. 227.

Porphyrospiza cyanella SCL. & SALV., Nom. Av. Neotr., 1873, p. 30.

Porphyrospiza pulchra SHARPE, Cat. Bds. Brit. Mus., XII, 1888, p. 625.

My assistant, Mr. Frank M. Chapman, in labeling the Maximilian types, has found that the type of *Tanagra cærulescens* Wied is the *Porphyrospiza cyanella* of Sclater and Salvin, and consequently also the *P. pulchra* of Sharpe. Mr. Sharpe questions (l. c., footnote) the applicability of Sparrman's *Emberiza cyanella* to this species, which he says appears to him "without a shadow of doubt" to be *Cyanospiza cyanea* (L.). Furthermore, he thinks it "extremely unlikely" that Sparrman "had the opportunity of figuring such a rare bird as the present species, to which a new name must be assigned." Not being at present able to consult Sparrman's work, I cannot decide for myself as to the correctness of Sharpe's identification of Sparrman's *Emberiza cyanella*, but it does not strike me that the supposed rarity of the bird usually identified with the *E. cyanella* of Sparrman has much bearing on the case. In the meantime it seems worth while to bring to light the hitherto wholly overlooked description of the species by Wied, as cited above.

The type is an adult male in very worn plumage, the general color of the upper parts being rather ashy brown, the feathers tinged and irregularly edged with blue, the blue color of the fresh plumage having largely disappeared through the wearing away of the ends of the feathers. This is to a less extent the case with the plumage of the lower surface, where, however, deep blue is still the prevailing color. This accounts for Wied's describing the bird as "Untertheile indigoblau, bräunlich gemischt; Obertheile graubraun, blau gemischt und überlaufen; Schnabel schlank und orangengelb." He says: "Dieser Vogel, der zwischen den Tangaras und den Finken in der Mitte zu stehen scheint, lebt in den weiten *Campos Geraës* des inneren Brasilien's," etc. He adds that he has "nur ein einziges männliches Individuum erhalten," and that the female is unknown to him. The specimen here referred to still bears the original label, as follows: "*T. cœrulescens* mihi, ♂, Brasilia, M. R."

It may be added in this connection that the species is probably not rare in certain parts of the Campo region, there being a series of 34 specimens in the Smith Collection made at Chapada, Matto Grosso.

Mecocerculus uropygialis *Lawr.*

Mecocerculus uropygialis LAWR., Ann. New York Lyc. Nat. Hist., IX, 1869, p. 266; SCL., Cat. Bds. Brit. Mus., XIV, 1888, p. 28.

Tyranniscus uropygialis BERL. & TACZ., P. Z. S., 1884, p. 296.

In a collection of Bogota skins recently purchased by the Museum is a single specimen of this rare species, apparently the fifth thus far known. The type (now in this Museum) is supposed to have come from Ecuador. Berlepsch and Taczanowski have reported three specimens (P. Z. S., 1884, p. 296), two males and a female, from "Cechece et de Cerro Margarita," Western Ecuador, collected by Stolzmann. The present specimen is said to have been collected at a point about thirty miles north of Bogota, thus greatly extending the range of the species to the northeastward. It is apparently a younger bird than the type, the wing-bands and the edging of the quills being more rufous (pale ochraceous instead of nearly pure white), the breast browner, and the yellow of the lower parts of a deeper tint, though closely agreeing with the type in all essential features. In neither can the under parts be said to be "uniform dusky," as recently described—a statement exceedingly misleading.

Platyrhynchus bifasciatus, sp. nov.

Pictura similar to that of *P. mystaceus*, but size larger, coloration above much greener, and below much yellower, and otherwise distinctly characterized by two strongly-marked wing-bands.

Male, adult.—Above olive green, the wings strongly edged with yellowish brown, and crossed by two prominent wing-bars, formed by the light brownish buff tips of the median and greater coverts; tail-feathers narrowly bordered with the color of the back. Below buffy yellow, darker across the breast and on the flanks, paler and more yellowish on the middle of the belly and throat, fading to nearly pure white on the lower throat. Crown-patch in the male deep golden. Lores yellowish white, with a dusky half eye-ring in front of a complete buffy yellow eye-ring. Ear-coverts centrally pale yellowish, with a broad blackish malar band passing in front and below them, and a blackish patch at their posterior border. Upper mandible black, lower yellowish white; feet pale yellowish. "Iris brown."

Female, adult.—Smaller, greener above, and lacking the coronal patch.

Young birds resemble the female, but have the wing-coverts, particularly the greater series, strongly edged and tipped with tawny. One specimen (No. 33,386, ♂, Dec. 30) still shows part of the nestling plumage, in which the interscapulars have the loose open structure of the first plumage, and are nearly pure tawny in color.

Measurements.—Male (average of five specimens), wing, 58.4 mm. (2.30 in.); tail, 34 mm. (1.34 in.); tarsus, 16.5 mm. (.65 in.); bill: length of culmen, 10.2 mm. (.406 in.); width at base, 10 mm. (.405 in.). *Female* (average of five specimens), wing, 58.4 mm. (2.03 in.); tail, 30.5 mm. (1.20 in.); tarsus, 15.8 mm. (.62 in.); bill: length of culmen, 9.7 mm. (.38 in.); width at base, 9.9 mm. (.39 in.).

Types, No. 33,379, ♂, June 6, 1885; No. 33,382, ♀, Aug. 9, 1883; Chapada, Matto Grosso, Brazil. Coll. H. H. Smith. The material in hand includes 18 specimens, — 11 males and 7 females,—all from Chapada, collected as follows: In January 2 specimens; in February, 2; in March, 1; in April, 2; in May, 1; in June, 3; in July, 1; in August, 1; in September, 3; in December, 2.

Although the present species belongs to the group of *Platyrhynchus* containing *mystaceus*, *cancrominus*, and *albigularis*, it is so distinct from them as to need no close comparison with either. It is especially distinguished by its large size, distinct wing-bars, and strongly greenish color above and buffy yellow below.

Platyrhynchus insularis, sp. nov.

Similar to *P. mystaceus*, but larger than average Brazilian specimens, greener above, and much paler below, with the crest of the male paler yellow.

Types, ♂, No. 74,845, U. S. Nat. Mus., Tobago, April 17, 1878; ♀, No. 74,843, U. S. Nat. Mus., Tobago. Both collected by Mr. F. A. Ober.

P. insularis differs from *mystaceus* in being decidedly larger (agreeing in size with *P. cancrominus*), in being greenish olive above instead of brownish olive, pale yellowish below, somewhat darker and slightly brownish across the breast, instead of olive brown, as in both *P. mystaceus* and *P. cancrominus;* the throat is also whiter. The differences, judging by the two specimens in hand, are much greater between *P. insularis* and the two last-named than are those which separate *P. cancrominus* from *P. mystaceus*, which are doubtless merely geographical races of one species, of which *P. insularis* may be considered as a third. The habitat of *P. insularis* renders it probable that the Tobago bird is well entitled to recognition as an insular form of *P. mystaceus.*

The types belong to the U. S. National Museum, and I am indebted to the courtesy of Mr. R. Ridgway for the opportunity of describing them in this connection.

The relationships and affinities of the several forms under notice may perhaps be expressed as follows:

1. *Platyrhynchus mystaceus* (Vieill.).
1*a*. *P. mystaceus cancrominus* (Scl.).
1*b*. *P. mystaceus albogularis* (Scl.).
1*c*. *P. mystaceus insularis* Allen.
2. *P. bifasciatus* Allen.

Euscarthmus ochropterus, sp. nov.

Above bright olive green, head browner, passing anteriorly into pale reddish brown; lores and region round the eye pale rufous; auriculars pale reddish brown; wings blackish, the primaries and inner secondaries broadly edged with yellowish green, the inner secondaries more broadly edged with bright greenish yellow, passing into whitish on the innermost; lesser wing-coverts bright yellowish ochraceous, the same color broadly tipping the median coverts and broadly edging and tipping the greater coverts; bend of the wing bright lemon yellow; under coverts and axillaries pale lemon yellow; tail blackish, edged with the color of the back. Below silky grayish white, darker across the breast and on the sides, lighter on the throat and middle of the belly, the lower belly and crissum nearly pure white; throat and breast obscurely flammulated with gray. Tibiæ colored like the lesser wing-coverts, but duller. Bill wholly deep black. Feet pale brownish.

There is a faint wash of greenish olive on the flanks, and some specimens show a faint tinge of greenish yellow over the greater part of the lower surface.

Measurements.—Male, wing, 47.2 mm. (1.86 in.); tail, 40.1 mm. (1.58 in.); tarsus, 19.3 mm. (.76 in.); bill: length of culmen, 14 mm. (.55 in.); width at base, 54.6 mm. (.215 in.). *Female* rather smaller, the wing averaging 45 mm. (1.77 in.), the tail 39 mm. (1.54 in.), and the tarsus 13.5 mm. (.53 in.). Otherwise similar to the male.

Types, No. 33,370, ♂, August 15, 1885; No. 33,368, ♀, June 27, 1885; Chapada, Matto Grosso, Brazil. Coll. H. H. Smith.

This very distinct species is represented by 15 specimens, 5 males and 4 females, and 7 unsexed or marked "♀?," all taken at Chapada, as follows: 1 in January, 1 in February, 1 in April, 4 in May, 2 in June, 3 in July, 1 in August, 1 in September, and 1 in November, indicating that the species is found throughout the year at Chapada. The bill varies considerably in size, and the females seem to average slightly smaller than the males, but in coloration the series is remarkably uniform, there being no variation with sex or season worthy of note.

E. ochropterus finds its nearest allies in *E. pelzelni* and *E. fumifrons*, with neither of which, however, is it closely related. The bill is strong and less narrowed at the point than in most of the *Euscarthmi*, being quite todirostral in character, but the species seems better referable to *Euscarthmus* than to *Todirostrum*.

Euscarthmus pelzelni *Scl.*

Euscarthmus margaritaceiventer PELZELN, Orn. Bras., ii, 1869, p. 101 (nec D'ORB. ET LAFR.).

Euscarthmus pelzelni SCL., Ibis, 1881, p. 101; *ib.*, Cat. Bds. Brit. Mus., XIV, 1888, p. 80.

There is a single specimen (No. 33,365, May 20, 1885, Chapada) of this rare species in the Smith Collection, which differs from an authentic specimen of *E. margaritaceiventris* as *E. pelzelni* does. This is apparently the second known specimen. It is interesting to note that the type specimen (*Natterer*, No. 545) was taken at Cuyaba, Matto Grosso, not far from Chapada.

Habrura superciliaris (*Wied*).

Euscarthmus superciliaris Wied, Beitr. zur Naturg. Bras. III, ii, 1831, p. 953.

Orchilus superciliaris Cab., Faun. Per., 1845–46, p. 164.

Serpophaga pectoralis Cab. & Heine, Mus. Hein., ii, 1859, p. 53, footnote (in part).

Habrura pectoralis Scl., Cat. Bds. Brit. Mus., XIV, 1888, p. 96 (in part).

An examination of the two types (Nos. 6785, 6789, Am. Mus. Nat. Hist.) of *Euscarthmus superciliaris* Wied discloses the fact that while they are referable to the genus *Habrura* Cab. & Heine, or are at least congeneric with *Habrura pectoralis* (Vieill.) auct. (on the type of the genus *Habrura* see remarks below), they still unquestionably represent a bird specifically distinct from *H. pectoralis*. The male is described by Weid as having "alle Obertheile aschgraubraun, an Kopf und Oberhals mehr in's Aschgraue fallend ; an Stirn und Mittelscheitel haben die Federn eine rein weisse Wurzel, ihre Mitte ist schwärzlich-grau, ihr Rand grau; von der Nase zieht über dem Auge hin eine weisse Linie ; am Mundwinkel und Kinn stehen weisse Federn ; Rücken etwas olivengrün leicht überlaufen ; Flügel graubraun mit helleren Rändern, hinterer Rand der inneren Fahne weisslisch ; Schwanz graubraun mit hell gelblichen Schäften, an der Spitze etwas abgenutzt ; alle undertheile des Vogels sind fahl gelbroth, an der Oberbrust am dunkelsten ; Mitte des Bauchs und After weiss ; Steiss blass gelblich, innere Flügeldeckfedern blassgelblich-weiss, blass aschgrau gefleckt."

The supposed female is described as similar, but as being of a lighter reddish below, a little less white on the middle of the belly, and with less white at the base of the crest-feathers. The habitat is given as the Campos Geraës of the Provinces of Minas and Bahia.

These specimens differ from any of a series of 8 examples from Chapada (Smith Collection) of *Habrura pectoralis* (auct.) in being nearly uniform grayish fuscous above (slightly darker on the head, but rump concolor with the back) instead of pale, dull cinnamon brown, with the rump deep buffy, and the top of the head blackish; in having less white at the base of the crest-feathers, and no black feathers on the chin, and in being nearly uniform pale cinnamon below, with the middle of the belly clear white, instead of the middle of the lower parts, from the throat to the lower tail-coverts, pale buff (frequently more or less interrupted by a brownish jugular band), in strong contrast with the deep buffy brown of the sides of the neck, sides of the breast, and flanks. The bill is also narrower and longer, the wing-bars whitish and narrow (instead of deep ochraceous and broad), and there is no black in the auriculars. In short, the two species are distinguishable at sight as being in no way closely related.

Habrura minima (*Gould*).

Pachyrhamphus minimus Gould, Zool. Voy. Beagle, Pt. III, Birds, 1841, p. 51, pl. xv.

Pachyrhamphus minimus Gould has very generally been synonymized with *Sylvia pectoralis* Vieill. (=*Habrura pectoralis* auct. recent.). If Gould's plate and description are to be relied on, such reference of *P. minimus* must be erroneous, since in both plate and description the whole head, *including the sides of the face, auriculars*, and *chin*, is represented as being "blackish brown, each feather white at the base," with a distinct broad jugular band ("band across the chest," or "fascia-pectorali") of "reddish fawn color." This calls for a bird very different from that described by Mr. Sclater (Argent. Orn., I, 1888, p. 138, and Cat. Bds. Brit. Mus., XIV, 1888, p. 96), or from any in the Chapada series I refer to this species. If Gould's types are extant it is to be hoped that they will be hunted up and their relationship to the *H. pectoralis* of authors made clear—something that does not seem as yet to have been done,—at least no reference is made to

Gould's types in the list of specimens of this species enumerated as belonging to the British Museum collection. Unless Gould's figure and description are both grossly misleading, the species is evidently not referable to *H. pectoralis*, though clearly very much nearer to this than to *H. superciliaris.*

NOTE ON THE TYPE OF THE GENUS **Habrura** CAB. & HEINE. —In Mr. Sclater's recent "Catalogue" of the Tyrannidæ (Cat. Bds. Brit. Mus., XIV, 1888, p. 96) he thus gives the type of the genus *Habrura :*

"Habrura, *Cab. et Hein., Mus. Hein.*, ii, p. 53 (1859).... Type, H. pectoralis." ("*H. pectoralis*" = *Sylvia pectoralis* Vieill.)

On turning to the "Museum Heineanum" (l. c.), we find that *Sylvia pectoralis* Vieill. is referred by Cabanis and Heine to the genus *Serpophaga*, and that the only species mentioned under *Habrura* is the *Pachyrhamphus minimus* of Gould, which is of course the type, and which in all probability is not *Sylvia pectoralis* Vieill.

Phyllomyias incanescens (*Wied*).

Muscipeta incanescens WIED, Beitr. zur Naturg. Bras., III, ii, 1831, p. 898.

Phyllomias berlepschi SCLATER, P. Z. S., 1887, p. 49 ; *ib.*, Cat. Bds. Brit. Mus., XIV, 1888, p. 123.

An examination of the two types of Maximilian's *Muscipeta incanescens* (Am. Mus. Nat. Hist., ♂, No. 6782, ♀, No. 6783) shows the species to be a true *Phyllomyias* and not a *Myiopatis*, as the two genera are now restricted, and is, so far as I can see, clearly identical with Sclater's *P. berlepschi*, recently described from a single Bahia specimen, whence came the original types of *Muscipeta incanescens.** In fact, Sclater's description of *P. berlepschi* is near enough to the original description of *M. incanescens* to almost pass for a translation of it, with slight verbal transpositions in the order of the characters, particularly the description of the female. The "auf dem Kopfe braun gefleckt" in the description of the male, refers only to the dark centres of the feathers of the cap, so common in many birds.

---

* Says Maximilian : "Dieser kleine Fliegenschnapper, wovon sich ein Paar in meiner zoologischen Sammlung befindet, lebt in Brasilien, und ich erhielt ihn aus der Gegend von *Bahia*, wo er nicht häufig seyn soll."—*Beitr. zur Naturg. Bras.*, III, p. 900.

The real character and affinities of Maximilian's *Muscipeta incanescens* have been the subject of much guesswork and speculation, it having been repeatedly referred to both *Myiopatis* and *Ornithion*, and also to *Sublegatus*, Mr. Sclater having recently identified it with *Sublegatus platyrhynchus* (Cat. Bds. Brit. Mus., XIV, p. 158). Mr. Lawrence was quite right in stating (Ibis, 1886, p. 497) that the bill of *M. incanescens* Wied was very much like that of *Myiobius pulcher*, but in other respects the two species are generically widely different.

Fortunately the Maximilian types are in a fair state of preservation, though obviously somewhat faded by long exposure to light.

Ornithion cinerascens (*Wied*).

Hylophilus cinerascens WIED, Beitr. zur Naturg. Bras., III, ii, 1831, p. 723.

Muscicapa obsoleta TEMM., Pl. col., No. 275, fig. 1 (fig. too highly colored); D'ORB. ET LAFR., Syn. Av., p. 51 (Mag. de Zool., 1837).

Muscicapara obsoleta D'ORB., Voy., Ois., p. 328.

Elainea obsoleta BURM., Thiere Bras., II, 1856, p. 480.

Myiopatis obsoleta CAB. & HEINE, Mus. Hein., ii, 1859, p. 58.

Ornithion obsoletum SCLATER, P. Z. S., 1873, p. 578; *ib.*, Cat. Bds. Brit. Mus., XIV, 1888, p. 127.

An examination of Maximilian's type of his *Hylophilus cinerascens* shows it to be a true *Ornithion*. Though very much faded from long exposure to light, it is otherwise in a fair state of preservation. The bill and toe-nails have faded to light brown, and the olivaceous color of the upper parts and flanks has nearly disappeared except where covered by the wings. The somewhat grayish head, the broad ochraceous wing-bars, and the size and form of the bill, however, at once suggest the *O. obsoletum* of authors. On turning to the original description this suggestion is at once confirmed, as the following shows: "Kopf und Oberhals aschgrau, bräunlich überlaufen; Rücken graubräunlich, olivengrünlich überlaufen; Flügel dunkelgraubraun, die Deckfedern fahl röthlich-braun stark gerandet; Schwungfedern graubraun, vorn mit grünlichem Rande, hinterer Rand weisslich;

innere Flügeldeckfedern weisslich-graugrün, am Flügelrande gelblich; Kinn, Kehle und Brust blassweisgrau; Bauch und übrige Untertheile weisslich, gelblich überlaufen; Schwanz fahl hell graubraun, aussen etwas grünlich gerandet; Beine schwärzlich-bleifarben; Schnabel oben über bräunlich-schwarz, unten weisslich; Iris graubraun."* Maximilian adds: "Ich erhielt ein einziges Exemplar im Walde zu *Barra de Jucú*, unweit des Flusses *Esperito Santo*."

The description above quoted fits admirably the freshly-killed birds in the Smith Collection from Matto Grosso (a series of 15 specimens), which I have identified by direct comparison with Bahia specimens of *Ornithion obsoletum*, identified as such by Mr. Sclater for Mr. Lawrence.

Maximilian, in describing his *Muscipeta incanescens*, recognizes the similarity of the two birds in color, as follows: "Er [*M. incanescens*] hat in der Färbung viel Aenlichkeit mit dem von mir unter der Benennung des *Hylophilus cinerascens* beschriebenen Vogel, ist aber dennoch sehr verschieden von ihm" (l. c., p. 900).

By the few who have cited Maximilian's *Hylophilus cinerascens* it has been simply given as a *Hylophilus*, but it is wholly ignored by Gadow in his treatment of the Vireonidæ (Cat. Bds. Brit. Mus., VIII, 1883), and seems to have been publicly recognized in its true character by no one, although Mr. Ridgway, in naming the South American mounted birds in the American Museum, some years since, wrote on the bottom of the perch "*Ornithion obsoletum?*" signing the identification (as usual), with his initials, "R. R.," thus displaying his usual sagacity in recognizing obscure birds.

Sublegatus virescens, sp. nov.

Head gray slightly washed with greenish, the feathers centred with darker; rest of upper parts pale green, faintly tinged with grayish, rump and upper tail-coverts slightly paler and browner; wings blackish, the quills externally and internally edged with yellowish white, the secondaries, particularly the inner ones, very broadly so; median and greater wing-coverts tipped with whitish, the greater series broadly so, forming two conspicuous wing-bars; tail blackish, the feathers broadly edged externally with light greenish olivaceous; throat clear grayish white; breast more ashy, washed with pale greenish yellow; rest of lower parts and under wing-coverts pale lemon yellow. Bill black, base of lower mandible slightly brownish; feet deep black.

---

* Beitr. zur Naturg. Bras., III, pp. 723, 724.

Length (skin), 111.8 mm. (4.40 in.); wing, 58.4 mm. (2.30 in.); tail, 53.3 mm. (2.10 in.); tarsus, 15.2 mm. (.60 in.); width of bill at base, 5.1 mm. (.20 in.); length of culmen, 6.9 mm. (.27 in.).

Type and only specimen, No. 33,316, ♂, May 8, 1885, Chapada, Matto Grosso, Brazil. Coll. H. H. Smith.

This species differs from the other commonly recognized species through its much smaller size and strong greenish color above. In the same collection are 8 specimens of *Sublegatus griseocularis*, from which the present species differs conspicuously in both color and size.

Empidonax lawrencei *Allen.*

Octhœca flaviventris Lawr., Ann. New York Acad. Sci., IV, Nos. 1, 2, June, 1887, p. 67.

An examination of the unique type of Mr. Lawrence's *Ochthœca flaviventris* shows it to be a true *Empidonax*, belonging to the section of the genus having the tarsi very short and the wings much rounded. It much resembles *E. brunneus* Ridgw. [? = *E. bimaculatus* (d'Orb. & Lafr.)], being, however, rather larger, with the cap darker, the back much greener, the breast a deeper, purer olive, and the yellow of the belly much deeper and stronger. The bend of the wing and the under wing-coverts are also paler (pale yellowish white instead of ochraceous), and the wing-bands are grayish buff instead of deep ochraceous. It also resembles my *E. bolivianus* (antea, p. 86), which latter, however, is much smaller, and presents differences of coloration that are well pronounced, as in the less amount of olive across the jugulum and the absence of bright yellow on the abdomen.

In Mr. Lawrence's specimen the rictal bristles are very strong,—nearly as strong as is generally the case in the genus *Ochthœca*, which fact doubtless led to the original reference of the species to that genus.

The specific name *flaviventris* being preoccupied in the genus *Empidonax*, I take pleasure in naming the species in honor of one who has done so much for the progress of American ornithology, and whose collection, the accumulation of a lifetime, so greatly facilitates ornithological work at this Museum.

Thamnophilus doliatus mexicanus *Allen.*

Thamnophilus affinis CAB. & HEINE, Mus. Hein., II, 1859, p. 7 (Xalapa). Nec *Thamnophilus affinis* D'ORB. ET LAFR., Syn. Av., p. 12 (Mag. de Zool., 1837) ex Bolivia=*Dysithamus*, sp. ?

The name *affinis*, given by Cabanis and Heine, in 1859, to the large well-marked Mexican race of *Thamnophilus doliatus* proves to be preoccupied by a *Thamnophilus affinis* of d'Orbigny and Lafresnaye, applied, in 1837, to a Bolivian bird apparently belonging to the section of the old genus *Thamnophilus* raised to generic rank by Cabanis in 1847, under the name *Dysithamus*. Having occasion to designate on our Museum labels the Mexican form of *T. doliatus*, I propose for it the name *mexicanus*.

NOTE ON **Formicivora griseigula** LAWR.—The type of Mr. Lawrence's *Formicivora griseigula* (Ann. New York Acad. Sci., II, 1883, p. 382) proves on examination to be an immature *Thryothorus coraya* (Gm.). The species was based on a single specimen (No. 39,506, Am. Mus. Nat. Hist.) from British Guiana, in the loose fluffy plumage of the young bird.

Peristera mondetoura *Bon.*

Among recent additions to our collection of birds are two specimens, male and female, of *Peristera mondetoura*, secured for the Museum by Mr. George N. Lawrence. The specimens are said to have come from Bogota, and are of the usual "Bogota" make. On comparing the male with a male in the U. S. National Museum, from Mexico, the two specimens are found to agree in all essential particulars, the Bogota bird being, however, in apparently rather higher plumage.

These two specimens, with a male and female in the National Museum collection, comprise all of the specimens of this species known to me as existing in the United States; and it appears to be a rare bird in European collections.

ARTICLE XIV.—*A Revision of the Genus Xiphorhynchus Swainson, with Descriptions of two New Species.* By FRANK M. CHAPMAN.

Since Lafresnaye's famous monograph of the *Dendrocolaptinæ* (Rev. et Mag., 1850, p. 145 *et seq.*), the genus *Xiphorhynchus* appears to have almost wholly escaped the attention of students of this difficult group; but two species have been added to the four he then recognized, and further notes or references are not only very limited but consist largely of mere notices of the occurrence of a given species in the region under consideration, with little or no discussion of its relationships or standing.

Messrs. Sclater and Salvin, in their "Nomenclator Avium Neotropicalium" (1873, p. 69), recognize only *Xiphorhynchus procurvus* Temm. (= *X. falcularius* Vieill.), *X. trochilirostris* Licht., and *X. pusillus* Scl.* Furthur than this I am in doubt as to how ornithologists regard the claims of certain species to recognition, and have, therefore, been governed solely by the material before me in arriving at the conclusions presented.

This material consists of, first, the Lafresnaye Collection, including Lafresnaye's types, courteously loaned by the Boston Society of Natural History; second, the U. S. National Museum Collection, Mr. Ridgway having kindly forwarded the specimens requested; and, third, the Lawrence, Maximilian, and Verreaux Collections contained in the American Museum of Natural History.

To the first-mentioned institutions I desire to express my sincere thanks for the permission to examine the material which has made this paper possible.

GENUS **Xiphorhynchus** *Swainson.*

Xiphorhynchus SWAINSON, Zool. Journal, III, 1827, p. 354. Type, *Dendrocalaptes procurvus* TEMM. (=*D. trochilirostris* LICHT.).

Dendrocopus VIEILL., Nouv. Dict. d'Hist. Nat., XXVI, 1818, p. 114 (in part; nec KOCH, 1816).

Ziphorhynchus SWAINSON, Classif. Birds, II, 1837, p. 313.

---

* *Xiphorhynchus pucheranii* Lafr. I have not examined, but would prefer to leave it in the genus *Drymornis* where Eyton placed it (*cf.* Jardine's Cont., 1851, p. 21).

[*July*, 1889.]

KEY TO THE SPECIES.

I. Bill reddish brown.

A. Back olive or reddish olive brown, darker than the wings.

a. Throat white or whitish, the feathers without or with only a slight lateral border of olive.

a^1 Border to feathers of throat very faint; shafts of rectrices usually darker than feathers; bill less than 2.50.
X. trochilirostris Licht.

a^2 Border to feathers of throat heavier; shafts of rectrices of same color as feather; bill more than 2.50.
X. venezuelensis Lafr. MS.

a^3 Throat unmarked; longitudinal lines of the breast and back with a narrow border of black...........*X. thoracicus* Scl.

b. Throat white or whitish, the feathers with a distinct lateral and terminal border of olive.

b^1 Back and abdomen entirely unmarked.
X. dorsoimmaculatus Nob.

b^2 Upper back and abdomen with longitudinal markings.
X. procurvoides Lafr.

B. Back rufous, of nearly the same color as the wings and tail.

a. Longitudinal markings of the feathers white or whitish; bill less than 2.75.........................*X. lafresnayanus* d'Orb.

a^1 Longitudinal markings of the feathers fulvous; bill more than 2.75...........................*X. rufodorsalis* Nob.

II. Bill not reddish brown.

a. Bill black or nearly black, more than 2.75; throat white unmarked.
X. falcularius Vieill.

a^1 Bill brownish white or horn color, less than 2.50; throat ochraceous, feathers bordered with olive brown.......*X. pusillus* Scl.

Xiphorhynchus trochilirostris (*Licht.*).

Dendrocolaptes trochilirostris LICHT., Abh. Ak. Berl., 1818, p. 207, pl. 3.

Dendrocalaptes procurvus TEMM. (nec auct.), Planche Col., 1820–38, pl. 28.

Xiphorhynchus procurvus SWAINS., Zool. Journ., III, 1827, p. 354.

Xiphorhynchus trochilirostris WIED, Beitr. zur Naturg., 1831, p. 1140 (syn. in part); GRAY, Genera Bds., 1844–49, p. 140; BONAP., Consp. Av., 1850, p. 207; REICH., Icon. Syn. Av., 1853, p. 183, No. 431, pl. Dxxxii, figs. 3660–61; BURM., Th. Bras., III, 1856, p. 16 (syn. in part); SCL., Cat. Am. Bds., 1862, p. 167; Pelz., Orn. Bras., 1868, p. 44; Scl. & Salv., P. Z. S., 1867, p. 575; Gray, Hand-List, Vol. I, 1869, p. 178; Scl. & Salv., P. Z. S., 1879, p. 524; Salv., Ibis, 1885, p. 423.

Xiphorhynchus procurvus Lafr., Rev. et Mag., 1850, p. 373.

Xiphorhynchus brevirostris Lafr. MS. (juv.).

? Dendrornis brevirostris Scl., P. Z. S., 1858, p. 63.

"*Xiphorhynchus wiedii* 'Behn' Hartl." (from Cab.).

Description.—Above reddish olive brown, passing into rufous on the rump and upper tail-coverts, the feathers of the upper back with ochraceous shaft-lines, those of the head centrally marked with whitish or ochraceous guttate spots bordered by brownish olive; on the neck these markings becoming more longitudinal and pass finally into the shaft-streaks of the back. Tail rich ferruginous rufous, the shafts of the median rectrices usually darker than the feathers; wing slightly lighter, the secondaries lightly and the coverts heavily margined externally with the color of the back. Below nearly the same color as above, sometimes a very little lighter, the feathers longitudinally marked with ochraceous; on the breast these marks are clear and distinct but pass posteriorly into mere shaft-streaks on the abdomen. Chin and throat white, the first unmarked, the feathers of the last with a fine lateral border of black or brownish black. Bill reddish brown of nearly the same color as the inner surface of the wings. Feet bluish black.

Measurements.—Average of nine specimens: Wing, 3.90; tail, 3.50; curve of culmen, 2.35. Smallest specimen: Wing, 3.80; tail, 3.40; curve of culmen, 2.28. Largest specimen: Wing, 4.00; tail, 3.65; curve of culmen, 2.40.

Habitat.—Brazil.

Remarks.—The variations shown by my series of nine specimens are apparently due to age alone, and consist mainly in the size and color of the longitudinal markings of the feathers, which in immature birds are less clearly defined and more ochraceous, and also in the intensity and richness of the general coloration.

X. trochilirostris finds its nearest ally in *X. venezuelensis* Lafr. MS., and it is very probable a large series of these birds, taken throughout their range, would show them to completely intergrade and perhaps connect them with other species of this genus. The material before me, however, is clearly referable to the two species as defined, and forces me to consider them distinct. As represented by my series, consisting of nine specimens of *trochilirostris* from Brazil, and ten specimens of *venezuelensis*, including Lafresnaye's types, from Brazil, Venezuela ?, Bogota, Panama and "Central America," *trochilirostris* may be at once distinguished from *venezuelensis* by its smaller bill, which rarely reaches 2.50, and by the almost entire absence of border to the feathers of the upper throat and chin, which in *venezuelensis* are of a more fulvous color with a distinct margin of blackish or brownish olive.

Xiphorhynchus brevirostris Lafr. MS., the type of which I have examined in the Lafresnaye Collection, is a young bird of this species.

Xiphorhynchus venezuelensis *Lafr.* MS.

Xiphorhynchus venezuelensis, LAFR. MS. VERREAUX, Cat. Lafr. Coll., p. 69; GRAY, Hand-List, Vol. I, 1869, p. 178; GIEBEL, Thesaurus, 1877, p. 766.

Xiphorhynchus isabella VERREAUX MS. (albinism).

Description.—Similar to *X. trochilirostris* Licht., but bill larger, throat not so white and more heavily margined with black.

Measurements.—Average of eight specimens: Wing, 3.81; tail, 2.63; curve of culmen, 2.68. Smallest specimen: Wing, 3.62; tail, 3.40; curve of culmen, 2.60. Largest specimen: Wing, 4.01; tail, 3.70; curve of culmen, 2.75.

Habitat.—Brazil, Venezuela ?, Bogota, Panama.

Remarks.—The Lafresnaye Collection contains two specimens, Nos. 2246, 2271, labeled as types of "*Xiphorhynchus venezuelensis* Lafr." This, so far as I am aware, is a manuscript name, and these birds are, therefore, here described for the first time under the name which Lafresnaye had given them, but apparently never published. My ten specimens show only a slight variation among themselves; three examples from Panama and a single one from Bogota have somewhat darker tails and somewhat smaller bills than Venezuelan specimens, but beyond this they do not in anyway differ from the types.

Xiphorhynchus isabella Verreaux, of which the type and only known specimen is in the Lafresnaye Collection, is simply an albinism of this species.

Xiphorhynchus pusillus *Scl.*

Xiphorhynchus pusillus Scl., P. Z. S., 1860, p. 278; Salvin, ibid., 1870, p. 193; Scl. & Salv., Nom. Neotrop., 1873, p. 69; Boucard, P. Z. S., 1878, p. 60; Scl. & Salv., ibid., 1879, p. 524.

Xiphorhynchus granadensis Lafr. MS; Scl. P. Z. S., 1858, p. 63; Verreaux, Cat. Lafr. Coll., p. 69; Gray, Hand-List, Vol. I, 1869, p. 178; Giebel, Thesaurus, 1877, p. 765.

Description.—Above reddish olive brown, somewhat darker and more olivaceous than in *X. trochilirostris;* the lower back and rump rich ferruginous rufous of the same shade as the wings and tail; head blackish, the feathers longitudinally streaked with fulvous, these markings slightly longer on the neck and passing into mere shaft-streaks on the upper back. Below of nearly the same color as the back, the feathers of the throat almost entirely fulvous with little, if any, marginal border of olive brown; fulvous streaks narrowing on the breast and passing gradually into shaft-lines on the upper belly. Bill brownish or horn color, darker at the base, without reddish tinge, the lower mandible lighter. Feet blackish brown.

Measurements.—Average of five specimens: Wing, 4.02; tail, 3.89; curve of culmen, 2.20. Smallest specimen: Wing, 3.98; tail, 3.70; curve of culmen, 2.25. Largest specimen: Wing, 4.10; tail, 3.92; curve of culmen, 2.10.

Habitat.—Colombia to Costa Rica.

Remarks.—Xiphorhynchus pusillus may be at once distinguished from any other member of the genus by the color of the bill, which lacks the reddish tinge so evident in all the other species except *falcularius*. Two specimens in the Lafresnaye Collection, Nos. 2249 and 2250, are labeled as types of "*Xiphorhynchus granadensis* Lafr.;" but this, so far as I am able to discover, is simply a manuscript name, and the species was not described by Lafresnaye; the name becomes therefore a synonym of *pusillus*.

Two specimens in the U. S. National Museum from Costa Rica (Zeledon), agree with a single specimen in the American Museum Collection, without locality, and differ from Bogota specimens of *pusillus* in being darker and more olivaceous, and in having the central feather-streakings narrower.

Xiphorhynchus procurvoides *Lafr.*

Xiphorhynchus procurvoides LAFR., Rev. et Mag., 1850, p. 376; SCL., Cat. Am. Birds, 1862, p. 167.

Xiphorhynchus procuroides GRAY, Hand-List, I, 1869, p. 178 (err. typ.).

Xiphorhynchus subprocurvus REICH., Icon. Syn. Av., p. 183.

Description.—Back clear olive brown without rufescent tinge, rump, wings and tail ferruginous rufous; head darker than the back, the feathers at the terminal half with a small elongated ochraceous spot bordered by olive and surrounded by black; on the neck these markings grow larger and whiter, the black border disappears, and on the upper back they change finally into shaft-lines, leaving the middle and lower back unmarked. The color below is similar to that of the back, the feathers of the throat with squamate spots of white; on the breast these spots assume a triangular shape, and on the belly pass into obscure narrow guttate markings. Bill reddish brown; feet blackish.

Measurements.—Wing, 3.72; tail, 3.28; curve of culmen, 2.40.

Habitat.—"Cayenne."

Remarks.—The Lafresnaye Collection contains two specimens, Nos. 2241 and 2242, labeled as types of "*Xiphorhynchus procurvoides* Lafr." One of these, No. 2241, agrees with the original description, and from this specimen the preceding description is taken; the other, No. 2241, is an entirely different species, and is the type of my *X. dorsoimmaculatus.*

Xiphorhynchus procurvoides finds its closest relationships in *X. pusillus* Scl. and *X. dorsoimmaculatus* Nob. From the first of these it may be distinguished (1) by the color of the back, which lacks the rufous tinge showing in *pusillus*, (2) by the color and shape of the central markings of the feathers, which are white or ochraceous, not fulvous, and (3) by the color of the bill, which in *pusillus* lacks the reddish tinge present in *procurvoides*. From *X. dorsoimmaculatus* it may be known (1) by the lack of rufous in the olive of the back, (2) by the presence of triangular white spots on the neck, which are entirely wanting in *dorsoimmaculatus*, and (3) by the markings of the under parts, which in *procurvoides* are white, larger, and reach to the lower belly, while in *dorsoimmaculatus* they are smaller and confined to the throat and breast.

Xiphorhynchus dorsoimmaculatus, sp. nov.

Xiphorhynchus procurvoides Lafr., Rev. et Mag., 1850, p. 376 (in part).

Type, No. 2242 of the Lafresnaye Collection in the Museum of the Boston Society of Natural History.

Chars. sp.—Similar to *X. procurvoides* Lafr., but back unmarked reddish olive, not clear olive with shaft-streaks; under parts minutely marked with whitish ochraceous spots confined to throat and breast, not larger white spots reaching to the belly.

Description.—Above reddish olive brown, darker than in *X. trochilirostris*, but not as dark as in *X. pusillus;* back absolutely unmarked; rump, wings and tail ferruginous rufous. Head blackish, darker than the back, the feathers with a small linear spot of ochraceous situated in their terminal half. Below of the same color as the back, the throat with rounded spots of whitish-ochraceous which on the upper breast become linear, and disappear entirely on the lower breast. Bill dark reddish brown; feet blackish.

Measurements.—Wing, 2.66; tail, 2.40; curve of culmen, 2.36.

Habitat.—Cayenne?

This description, of the only specimen in my possession, is taken from No. 2242 of the Lafresnaye Collection, which is labeled as one of the types of "*Xiphorhynchus procurvoides* Lafr.," from which, however, as the diagnosis shows, it is quite distinct. The label bears no locality, and the exact habitat of this species is uncertain. Lafresnaye, however, remarks (orig. descr., l. c.) that all the specimens which he had examined came from Cayenne.

Xiphorhynchus thoracicus *Scl.*

Xiphorhynchus thoracicus Scl., P. Z. S., 1860, p. 277 ; ibid., p. 291 ; Tacz., ibid., 1877, p. 323 ; Berl. & Tacz., ibid., 1883, p. 563 ; Tacz., Orn. du Pérou., 1884. p. 181 ; Tacz. & Berl., P. Z. S., 1885, p. 98 ; ibid., p. 122.

Description.—"Brunneus : alis, uropygio, et cauda ferrugineo-rufis : gula sordide alba : dorsi superi capitis undique et pectoris plumis medialiter ochracescenti-albidis, hoc colore nigro anguste circumdato, plumarum marginibus externis : rostro rubescente : pedibus fuscis.

"Long. toto 10.0, alæ 4.0, caudæ 3.7, rostri a rictu ad apicem linea directa 2.7." (Sclater, orig. descr., l. c.)

Habitat.—Ecuador, Peru.

Remarks.—I have not seen an example of this species, but Mr. Sclater remarks (l. c.), easily recognizable by the clear elongated spots occupying the centre of the feathers of the breast and back. These spots are narrowly surrounded by black, and broadly margined outwardly with the general brown ground-color."

Xiphorhynchus lafresnayanus (*d'Orb.*).

Dendrocalaptes lafresnayanus d'Orb., Voy., Ois., p. 368, pl. liii, fig. 2.

Dendrocalaptes procurvus d'Orb. (nec Temm.), Syn. Av., ii, p. 12 (Mag. de Zool., 1838).

Xiphorhynchus lafresnayanus Lafr., Rev. et Mag., 1850, p. 377 ; Reich., Icon. Syn. Av., 1853, p. 183, pl. 3659 ; Scl., Cat. Am. Birds, 1862, p. 168 ; Pelz., Orn. Bras., 1868, p. 44; Gray, Hand-List, I, 1869, p. 178 ; Scl. & Salv., P. Z. S., 1879, p. 623.

Description.—Similar to *X. trochilirostris* Licht., but bill slightly longer, back rufous, of the same color as wings, and feathers of the throat terminally as well as laterally bordered with blackish.

Measurements.—Wing, 4.00 ; tail, 3.55 ; bill, 2.64.

Habitat.—Bolivia.

Remarks.—The single specimen of this species in my possession is from the Lafresnaye Collection.

Xiphorhynchus rufodorsalis, sp. nov.

Type, No. 33,654, Am. Mus. Nat. Hist. Collected by Herbert H. Smith, Feb. 26, 1886, at Corumbá, Matto Grosso, Brazil.

Chars. sp.—Differing from all known members of the genus in having the back rich ferruginous rufous, of nearly the same color as the wings and tail.

Description.—Above rich ferruginous rufous, of nearly the same color as the wings and tail, somewhat browner on the lower back and wing-coverts, and more fulvous on the neck; head blackish olivaceous, the feathers centrally marked with ochraceous bordered by olive and margined by black; neck with extremely narrow median streaks of fulvous, which are continued on the back as shaft-lines; below lighter, rich tawny ochraceous, with a wash of rufous, resembling thus the color of the neck; chin dirty white, the feathers with narrow black edgings, rest of the under parts longitudinally marked with fulvous, which appears as shaft-streaks on the abdomen; shafts of remiges and rectrices black or blackish. Bill dark reddish-brown; feet plumbeous.

Measurements.—Wing, 4.25; tail, 3.92; bill, 3.15.

Habitat.—Corumbá, Matto Grosso, Brazil; Paraguay.

Remarks.—While this new species bears no close relationship to any known member of the genus, it finds its nearest ally in the Bolivian *X. lafresnayanus* d'Orb., from which, however, it may be readily distinguished by its more tawny color below, by the central markings of the feathers being fulvous, not white or whitish, and by the white markings of the throat being longitudinal, not squamiform. No. 20,957 of the U. S. National Museum Collection, collected by Capt. Page on the Parana, is slightly darker below, but in other respects resembles the type.

Xiphorhynchus falcularius (*Vieill.*).

Dendrocopus falcularius VIEILL., Encyl. Méthod., 182–, p. 626; LESSON, Traité d'Orn., 1831, p. 313; VIEILL., Gal. Ois., 1834, p. 286, pl. 175.

Xiphorhynchus falcularius GRAY, Genera Bds., 1844–49, p. 140; REICH., Icon. Syn. Av., 1853, p. 182; No. 427, pl. Dxxxii, fig. 3657.

Xiphorhynchus procurvus CAB., Mus. Hein., ii, 1859, p. 39; SCL., P. Z. S., 1854, p. 111; Cat. Am. Bds., 1862, p. 167 (syn. in part). PELZ., Orn. Bras., p. 44; GRAY, Hand-List, I, 1869, p. 178; BERL. & JHER., Zeit. für ges. Orn., 1885 (p. 51 of author's separates).

Xiphorhynchus trochilirostris WIED, Beitr. zur Naturg. Bras., p. 1140 (syn. in part); LAFR., Rev. et Mag., 1850, p. 374.

Description.—Back olive brown, unmarked, passing into rufous on the rump and upper tail-coverts; head black, the feathers centrally streaked with white or whitish; tail deep ferruginous rufous, wings slightly lighter, the coverts and secondaries margined with the color of the back. Under parts slightly paler than the back, the throat white, feathers of breast centrally streaked with same, belly unmarked. Bill black, or brownish black; feet plumbeous.

Measurements.—Average of five specimens: Wing, 4.05; tail, 4.09; curve of culmen, 2.90. Smallest specimen: Wing, 3.98; tail, 4.00; curve of culmen, 2.85. Largest specimen: Wing, 4.15; tail, 4.30; curye of culmen, 3.02.

Habitat.—Brazil.

Remarks.—This is the most distinct and easily recognizable species of the entire group, the coloration of the head and bill separating it at once from any other member of the genus; for this reason I cannot understand why it should have been confused with the *procurvus* of Temminck, which is described as having the head of the same color as the back and the bill reddish, characters possessed by almost every other species of the genus except the one in question.

Temminck, himself, recognized in the red-billed *trochilirostris* of Lichenstein his own subsequently-described *procurvus*. The next available name is *falcularius* of Vieillot, whose description and figure (Galerie Oiseaux, l. c.) agree well with our species; indeed, aside from the fact that the names are not synonymous, it is by no means certain that *procurvus* Temm. antedates *falcularius* Vieill.; the first appears in the fifth livraison of "Planches Coloriées," or sometime in the year 1820, while *falcularius* was first described in the Encyl. Méthodique, Ornithologie, Tom. II. The title page of this work, dated 1791, we know to be incorrect, so far as it assumes to be the date of the final issue of the volume, which certain contained references lead us to suppose was really published sometime between 1820 and 1823, the date at which the third and succeeding volume appeared.

ARTICLE XV.—*Description of a New Species of Hummingbird of the Genus Amazilia.* By FRANK M. CHAPMAN.

Amazilia æneobrunnea, sp. nov.

Chars. sp.—Differing from all known members of the genus in having the entire back a rich seal brown with bronzy or greenish reflections, the lower breast and abdomen of nearly the same color but without iridescence.

Type, No. 36,071, American Museum of Natural History. Purchased of C. S. Galbraith, and said to have come from Bogota.

Description.—Head and neck bronzy green of about the same color as in *A. viridiventris* (Reich.) and *A. lawrencei* Elliot ; whole back, including the upper tail-coverts, rich seal brown with greenish brown reflections. Wings purplish black, similar in color to those of *A. yucatanensis* (Cabot), but having the coverts of nearly the same color as the back (not greenish as in *yucatanensis*), the under surface showing more decided purplish reflection. Tail ferruginous rufous slightly lighter than in *A. lawrencei* Elliot, the feathers all tipped with the color of the back, this color confined to their terminal portion and not extending down the outer web of the lateral feathers as in *lawrencei*. Under surface of the tail with pronounced purplish reflections. Throat and upper breast vivid metallic green, the sides of the throat with slight glittering bronze reflections. Lower breast and abdomen rich seal brown with little, if any, bronze or green reflection. Crissum bright cinnamon ; flanks and thighs with a tuft of white feathers. Bill black, the mandible flesh color for its basal half ; feet brownish black.

Measurements.—Wing, 2.15 ; tail, 1.36 ; bill, .60.

Habitat.—The skin is of the characteristic "Bogota" make.

Remarks.—This new species is so remarkably distinct as to scarcely require comparison with any other member of the genus. In the recently described *Amazilia lawrencei* Elliot it apparently finds its closest relationship, but may be readily distinguished from it (1) by the color of the back and wing-coverts, which in *lawrencei* are bronzy green and in *æneobrunnea* seal brown with bronze or green reflections ; (2) by the absence of border to the outer webs of the lateral tail-feathers; (3) by the extent of the green color below, which in *lawrencei* covers the entire breast, and in *æneobrunnea* is restricted to the throat and forebreast; (4) by the color of the abdomen, which in *lawrencei* is chestnut brown, and in *æneobrunnea* seal brown; and (5) by the color and size of the bill, which in *lawrencei* measures .71 and is black with the base of mandible only slightly lighter, and in *æneobrunnea* measures .60 with the basal half of the mandible flesh color.

Article XVI.—*Notes on a Collection of Mammals from Southern Mexico, with Descriptions of New Species of the Genera Sciurus, Tamias, and Sigmodon.* By J. A. Allen.

The Museum has recently received a small but very important collection of mammals, made for it by Mr. Audley Buller, during a journey "from Tepic across the Sierra de Nayarit and adjoining ranges of the Sierra Madre to Zacatecas, a distance of over 1000 miles....through one of the most inaccessible and least known parts of this country." The specimens were therefore not collected in a single district, "but over a large extent of country, including some regions where no white man, much less a collector, has ever before penetrated." Mr. Buller further writes that mammals were few in species and scarce. The collection numbers 45 skins, with their skulls, and 10 additional separate skulls, representing 16 species. Of these three are apparently new. One of the finest acquisitions is a specimen (skin and imperfect skull) of the rare *Spermophilus annulatus* Aud. & Bach., previously known only from the original specimen (from an unknown locality, and long since lost), and a single specimen in the U. S. National Museum, collected by Mr. John Xantus on the Plains of Colima, Mexico, in 1863, and described by me in 1867.* Other novelties are a new species of *Sciurus*, a species of *Sigmodon*, and a very distinct new form of *Tamias*, which extends the habitat of the last-named genus several hundred miles south of any point whence it has hitherto been reported.

1. **Putorius brasiliensis frenatus** (*Stew.*).—This species is represented by a male, taken at Tepic, June 10, 1889.

2. **Atalapha cinerea** (*Beauv.*).—One specimen, male, Hidalgo San Marcos, Tonila, Jalisco, May 12, 1889.

3. **Vesperugo fuscus** (*Beauv.*).—Two specimens, male and female, Sierra de Valparaiso, Zacatecas, Aug. 2, 1889. These specimens are quite different from United States examples, particularly in coloration.

4. **Vespertilio** (sp. allied to *nigricans*).—One specimen, male, Hidalgo San Marcos, Tonila, Jalisco, May 8, 1889.

---

* Mon. N. Am. Rodentia, pp. 886–889.

5. Macrotus californicus *Baird.*—Eight skins and skulls, and three additional skulls, all males. Bolaños, Jalisco, July 3, 1889. "Occurs in immense numbers in the adits and old mine drifts of the Mineral de Bolaños. Of the fourteen captured all were males, whereas in the case of other kinds of bats taken here females generally predominate." (*Audley Buller*, MS. notes.)

In the absence of specimens for comparison, it is difficult to say certainly whether they are the same as California specimens. Judging by descriptions, they seem somewhat darker in color.

6. Sciurus aureogaster leucops (*Gray*).

Macroxus leucops GRAY, Ann. and Mag. Nat. Hist., 3d ser., XX, 1867, p. 427.

Sciurus leucops ALLEN, Mon. N. Am. Rod., 1877, p. 753.

Sciurus aureigaster ALLEN, Bull. U. S. Geol. and Geogr. Surv., IV, 1878, p. 882 (in part).

Sciurus variegatus ALSTON, P. Z. S., 1878, p. 660; Biol. Centr. Am., Mam., p. 127, June, 1880 (in part—"the *leucops* type" only).

Four specimens, as follows: male and female, Sierra Nevada de Colima, Zapotlan, Jalisco, April 6, 1889; female, Hidalgo San Marcos, Tonila, Jalisco, May 12; male, same locality, May 14. These specimens, all fully adult, differ very little in color, all being pure white below, and dark pure gray above, with the top of the head blackish, the nape and rump rusty, the pelage very soft and full, and the tail very bushy. In all the rusty nape and rump patches are well defined, but vary in shade of color. No. 1989, ♀, shows less rust than the others; No. 1991, ♂, has the largest patches of this tint. Aside from the nape and rump patches the pelage above is dusky tipped with white, with no trace of any subterminal yellowish ring, as noted in specimens from Tehuantepec and Durango (see Mon. N. Am. Rod., pp. 753–755); otherwise, especially in the white belly, they appear to agree with Durango specimens (l. c., p. 754), particularly those with no yellow in the tail.

Compared with a series of specimens of *S. aureogaster* in Mr. Sennett's collection from Tampico, it seems hardly possible that the two forms should be considered as conspecific, the style of coloration being so radically different, the Tampico specimens being also much smaller. In view, however, of former experience in respect to the variability of Mexican Squirrels, especially in color, it seems probable that Mr. Alston's view that the *S. leucops* is only a form of *S. aureogaster* Cuv., occupying a distinct habitat of its own, is correct.

Mr. Buller writes to me that he thinks the Sierra Nevada de Colima is probably the northern limit of this species, as he found none in the Sierra de Nayarit. "The flesh," he says, "tastes so strongly of turpentine that it is almost uneatable. They build nests of sticks in the pines, and were nesting in April and May. In winter they come down lower to the foothills."

7. **Sciurus alstoni,** sp. nov.

A series of six skins with skulls and two additional skulls represents a species of *Sciurus* I have never before seen, the premolars being $\frac{1}{1}$ instead of $\frac{2}{1}$, as in all of the other large Mexican *Sciuri* I have hitherto examined. It is of the maximum size, with a very long and very bushy tail, large, broad ears, and the dental formula of the Fox Squirrels of the United States. The only other Neotropical *Sciuri* with the premolars $\frac{1}{1}$ are of small or medium size, and range only from Central America southward.

CHARS. SPECIF.—Size and proportions of *Sciurus fossor*. Length of body (skins), 260 to 304 mm. (10.25 to 12 in.); tail vertebræ, 254 to 287 mm. (10 to 11.25 in.); tail to end of hairs, 320 to 381 mm. (13 to 15 in.). Above the surface of the pelage is pure gray, the hairs being tipped broadly with white and subterminally ringed rather broadly with black; below the surface the hairs are pale rusty brown nearly to the base, this color forming a broad band occupying one-half to two-thirds the length of the hairs, which at the extreme base are rather pale, more or less yellowish, plumbeous, which is also the color of the abundant underfur. Belly and whole lower parts, as well as the inner surface of both fore and hind limbs, pure white to the base. The color of the dorsal surface extends low down on the sides of the body, and is abruptly defined against the pure white of the ventral surface. The outer surface of the fore limbs is much lighter than the back, the white tips to the hairs being longer, till, on the lower arm and manus, the general color is whitish, with less black below the surface, and the basal portions pale yellowish white. The outer surface of the hind limbs is similar, the toes being nearly pure white, while the dark color below the surface is more apparent on the top of the feet. Soles of all the feet naked. Top of the head rather darker than the back, with less fulvous beneath the surface. Eye-ring and sides of the nose white, grayish white, or yellowish white. Ears broad, high, rounded at the top, nearly naked internally, sparsely covered with short grayish hairs externally, and with a small, not strongly defined patch of soft, fulvous, or pale yellowish white hairs at the posterior base. Tail full and bushy, the hairs very long; above mixed black and white; sides, both above and below, very broadly fringed with white; below, centrally, cinnamon rufous, varying somewhat in intensity in different specimens, occupying one-third to one-half of the basal portions of the hairs, which are thus broadly white at the tip, rufous at the base, with a broad intervening band of black.

Type, No. 1985, Am. Mus. Nat. Hist., ♂ ad., Sierra de Valparaiso, Zacatecas, July 27, 1889. Coll. Audley Buller.

Of the six skins of this species four are fully adult, while two belong to animals not quite fully grown, the first premolar of the milk dentition being still in place, with the permanent one showing beneath it. There is, however, very little difference in coloration between any of the series, as already indicated in the foregoing description, except that several of the specimens are in much worn pelage, in which the white tips of the hairs of the lower back, rump, and base of the tail are more or less worn away. As all of the specimens were taken in July and August (July 14 to August 3), the above description is of course that of the summer pelage. The following is a list of the specimens, with dates and localities of capture.

Skin.	Skull.	Sex.	Locality.	Date.
1983	1252	♂	S. de Nayarit (S. Madre), Jalisco.....	July 14, '89.
1984	1253	♀	" " " "	" 14, '89.
——	1280	♂	" " " "	" 14, '89.
1985	1254	♂	S. de Valparaiso, Zacatecas..........	" 27, '89.
1986	1255	♀	" " "	" 27, '89.
1987	1256	♂	" " "	" 27, '89.
1988	1257	♂	" " "	Aug. 3, '89.
——	1289	♂	" " "	July 27. '89.

In general size and length of tail this species ranks with *S. niger* (and its varieties), *S. fossor*, and *S. arizonensis* of the United States, and *S. griseoflavus* and *S. hypopyrrhus* of Mexico and Central America. It is, however, most nearly allied to the Fox Squirrels (*S. niger* group) of the United States, with which it agrees in having only one upper premolar, and in the pattern of coloration of the tail, by which characters it is sharply separated from each of the other above-mentioned species. It has, however, no very close relationship to any of the Fox Squirrels, as shown by the character of the ear, which is fully twice as large as in any form of *S. niger.*

The skull, in size, form, and general character, much resembles the skull of *S. niger ludovicianus*, but certain minute differences in the position and form of some of the foramina and sutures render the two types readily separable. The absence of a minute second upper premolar renders *S. alstoni* easily separable from all of the larger Mexican *Sciuri.* In respect to external characters, this species evidently somewhat resembles in color *S. griseoflavus* (Gray), as defined by Alston (P. Z. S., 1878, p. 660) and Gray, except that the lower parts are white instead of yellowish red (a not important difference, in view of the usual variability of Mexican Squirrels in this respect), and the tail has only one broad black lateral band on each side instead of several narrow ones. As Mr. Alston observed, *S. griseoflavus* is obviously closely related to *S. arizonensis*, of which it may be only a southern form ; in which case it can have no close affinity with *S. alstoni.* Neither Gray nor Alston gives the dental formula of *S. griseoflavus*, nor any measurements, or has anything to say respecting the size of the ears. The Mexican Squirrels generally have large ears in comparison with those of the more northern species, but in *S. alstoni* they attain a size much larger than in any other Mexican species I have seen (*S. griseoflavus* is the only one I have not examined). In *S. alstoni* the ear is both high and broad, being fully twice the dimensions of the ear in *S. niger ludovicianus*, the height ranging from 23 to 25.5 mm. (.90 to 1.00 in.), and the width at base from 21.5 to 24 mm. (.85 to .95 in.). In *S. hypopyrrhus* the ear is high, narrow, and pointed, and while nearly as high as in *S. alstoni*, the breadth is fully a third less.

I take pleasure in naming this apparently very distinct species in memory of the late Mr. E. R. Alston, who has done so much to increase our knowledge of the mammals of Mexico and Central America, and especially in elucidation of the Neotropical *Sciuri.*

Of this species Mr. Buller writes: "Very plentiful in the Sierra de Bolaños, a part of the Sierra de Nayarit, at an altitude of 7,500 to 8,000 feet. Habits apparently similar to those of *S. leucops*, which species it may replace north of the Sierra Nevada de Colima."

8. Spermophilus grammurus macrourus (*Benn.*).

Spermophilus macrourus Bennett, P. Z. S., 1833, p. 41; ".Dugés, La Natureleza, I, p. 137."

"*Spermophilus grammarus?* Say," De Saussure, Rev. et Mag. de Zool., 2d sér., XII, 1860, p. 36.

Mr. Buller's collection contains four specimens (three males and one female, all adult), from Zapotlan, State of Jalisco, which represent a form quite distinct from *Spermophilus grammurus*, as the latter is found in Colorado, Texas, New Mexico, and Arizona. The general color above is blackish, mixed with gray or brownish gray, darkest on the anterior half of the body, with a rather distinct almost pure blackish crown. The general blackish effect is produced by the dark rings of the individual hairs of the dorsal surface being much blacker and much broader than in true *grammurus*, with less gray at the tips. The tail is very full and bushy, the individual hairs with four zones of deep black, instead of three (sometimes only two) of blackish, as in *grammurus*. The lower surface is also much darker than in *grammurus*, owing to the dusky basal portion of the hairs being darker and more extended. The ears are much lower and more rounded.

In respect to size this form is as large as the largest specimens of *grammurus*, thus somewhat exceeding the average size of the latter. The skull averages 4 mm. (.15 in.) longer, and slightly broader, than in *grammurus*, with a much longer tooth-row and heavier dentition. The length of the upper molar series in *macrourus* is 13.5 mm. (.53 in), against 10 mm. (.44 in.). in *gram-*

murus, with the breadth of the individual teeth proportionately greater, giving a conspicuously more massive dentition.*

In general appearance *macrourus*, through the grizzled blackish coloration of the upper surface and the low rounded ears, is very different from any hitherto described form of *grammurus*. Its dusky appearance does not indicate a tendency to melanism, while if it should be so considered, the other differences serve to clearly distinguish it from any of its allies, unless it be Mr. Bryant's *S. grammurus atricapillus*, recently described† from Lower California. The description, however, is too brief to give a clear conception of the characters of *atricapillus*. It has nothing in its general appearance to suggest any close relationship with *S. grammurus beecheyi*.

This subspecies seems to be beyond question the Spermophile described long since (P. Z. S., 1833, p. 41) by Mr. Bennett under the name *Spermophilus macrourus*, Mr. Buller's specimens closely agreeing with Mr. Bennett's description. In 1877 (Mon. N. Am. Roden., pp. 827, 832) I referred rather confidently *S. macrourus* to *S. grammurus beecheyi*, mainly on the supposition that the original specimens came from California, the habitat being given as "from that part of California which adjoins to Mexico." The late Mr. Alston has since examined Mr. Bennett's type in the British Museum, which he refers to as "from Western Mexico," and which he considers as "a somewhat dark example of the typical form of *S. grammurus*." Dr. Dugés has also already recorded *Spermophilus macrourus* from the Mexican States of Jalisco and Guanajuato. De Saussure also evidently describes (l. c.) this form under the name "*Spermophilus grammarus ?* Say."

Mr. Buller says (MS. notes): "Habitat, stone walls close to public roads and in vicinity of habitations. They appeared to me decidedly darker in color, and in other respects slightly different from the species commonly found in the neighborhood of Guadalajara, specimens of which I hope to send you later."

---

* In this connection it is interesting to note that in *grammurus* proper the detition becomes heavier from the north southward, Colorado specimens having much smaller teeth than specimens from near the Mexican border of Texas and New Mexico, as shown by the measurements given of the skulls of *grammurus* in "North American Rodentia," p. 834, table LXXXII.

† Proc. Cal. Acad. Sci., 2d ser., Vol. II, 1889, p, 26.

9. Spermophilus annulatus *Aud. & Bach.*—A single specimen (No. 1980, Am. Mus. Nat. Hist.) in Mr. Buller's collection, a female, taken at San Blas, Territorio de Tepic, May 1, 1889, agrees perfectly with my description* and recollection of the only specimen of this rare species known to me to be extant. This was taken by Mr. John Xantus on the Plains of Colima, Western Mexico, in 1863 (No. 7018, U. S. Nat. Mus.). I have nothing to add to the account already given (l. c.) of the external characters of the species. The skull accompanying this skin is unfortunately incomplete, lacking the basal and hinder portions of the cranium, and thus nearly useless for purposes of measurement. The remaining portion of the skull shows conclusively that the species is a member of the subgenus *Otospermophilus*, where I formally provisionally placed it (l. c., p. 821), and that its nearest allies are the *S. grammurus* group. The first upper premolar is very slender, not more than one-fifth or one-sixth the size of the second. The anteorbital portion of the skull is rather short, and the interorbital portion very broad.

This specimen, Mr. Buller informs me, was given him by Mr. W. B. Richardson, who, by Mr. Buller's request, has kindly written me as follows: "I noticed this species from San Blas to Santiago (the only two places I visited on the coast). It frequents the silk-cotton and other large trees, nesting in holes of those trees, and living on the wild fruit and nuts found in the hot coast country. Eastward, after leaving the borders of the mangrove swamps and on the ascent to the higher country, I never saw any. I met with them only around the dense mass of vines and tangled brush that climb around the larger trees. I shot three, and intend to send the other two to Mr. Sennett."

10. Spermophilus spilosoma *Benn.*—This is another of the species of mammals described by Mr. Bennett, in 1833, "from that part of California which adjoins to Mexico." Mr. Buller's collection contains two specimens of this still rare species, taken August 17, 1889, at Zacatecas. This extends the range of the species considerably southward of its previously known point of occurrence—namely, Janos, Sonora.

---

* Mon. N. Am. Rod., p. 886.

Mr. Buller says (MS. notes): "Were taken on the plateaux about 5,600 feet above sea level, near the city of Zacatecas, where they occur in great numbers."

11. Tamias asiaticus bulleri,* sp. nov.

The greatest surprise afforded by Mr. Buller's collection is perhaps a fine series of specimens of a form of the genus *Tamias*, this genus having not heretofore been reported from any point much south of the northern boundary of Mexico. Indeed, the late Mr. Alston, as recently as 1882 (Biol. Cent. Am., Mam., p. 134) could point to no "direct evidence" of its occurrence in Mexico, and therefore excluded the genus from his enumeration of the mammals of that country. Since then we have received specimens of *T. a. dorsalis* from near the southern boundary of Arizona, and a form nearly allied to *T. a. quadrivittatus* has been taken in Northwestern Mexico. It now turns out that the genus *Tamias* is represented by a peculiar and hitherto undescribed form in the Sierra de Valparaiso, State of Zacatecas, where it is said by Mr. Buller to be "very adundant."† His collection contains nine specimens, eight of which are represented by both skins and skulls, and one by only a skull.

Description. — Average measurements, taken from skins: length of head and body, 127 mm. (5.00 in.); tail vertebræ, 98 mm. (3.85 in.); tail to end of hairs, 125 mm. (4.93 in.); hind foot, 33.5 mm. (1.32 in.); height of ear from occiput, 37.3 mm. (.47 in.); breadth of ear at base, 37.3 mm. (47 in.). Ears large, rather high, very broad, and broadly rounded at the tip, instead of pointed as in several of the allied forms; dull rusty within and on the anterior external border nearly to the tip; posterior external border grayish (sometimes fulvous) white, passing forward so as to broadly margin the whole top of the ear; between these two bands, at the base of the ear, is a broad triangle of black, the apex of the triangle reaching as far as the distal third of the ear, the exterior surface of the ear being thus sharply tricolored. Top of the head grayish brown with a slight admixture of rusty. Behind the ear an oblong, broad, conspicuous patch of grayish white, about two-thirds as large, but not so clear white, as in *T. macrorhabdotes* Merriam. Whole sides of the body, buttocks, and upper surface of the tail pale olivaceous gray, a little more mixed with black on the tail, and slightly more fulvous on the sides of the body in front of the hind quarters, and more whitish on the sides of the neck. Dorsal region with five dark and four light stripes; the three median dark bands deep black, very slightly mixed with rufous at their edges; the two outer dark stripes (one on each side) much shorter (extending only from the shoulders to the hips) dark rufous brown, often bordered sharply with black on their upper border, and usually not trenchantly defined below, but shading gradually into the pale olivaceous fulvous of the sides. The two middle light stripes are gray, mixed with rusty on the edges; the two outer light stripes grayish white, or nearly pure white. The median black stripe begins at the anterior border of the crown and runs to the base of the tail; the black stripe on either side of this begins at the shoulder and reaches a point a little behind the hips. Sides of the nose, cheeks, under parts, and the upper surface of fore and hind feet soiled white, or olivaceous grayish white, this color extending on to the fore-arm, and running back on the inner edge of the hind feet to the heel; posterior upper surface and outer edge of the heel dusky gray or blackish. Lower surface of the tail dull yellow in the middle, bordered on either side and at the tip narrowly with black, with the tips of the hairs olivaceous gray. The tail itself is very narrow and thin. The facial markings are as follows: a broad superciliary stripe of white, running from the nose to the anterior base of the ear; above this and immediately bordering it is a narrower but sharp line of black, of similar extent, this line joining its fellow at the nose, where they form a conspicuous V-shaped mark. Below the superciliary stripe is a broad ocular stripe of black, forming behind the eye a broad oblong patch of black, more or less mixed with rusty at its posterior border. This post-ocular spot, 6.4 mm. (.25 in.) by 10 mm. (.40 in.) in area, is a strikingly distinctive feature. Below the black ocular stripe is a very distinct subocular stripe of white, which runs from the sides of the nose posteriorly, joining without break the large white spot behind the ear. Below this subocular white band is a narrow but well-defined streak of deep rusty brown mixed with black, the amount of black varying somewhat in different specimens.

---

* Named for Mr. Audley Buller, in recognition of his intelligent and important field work in gathering the material forming the basis of the present paper.

† He says: "They live in hollow trees, but come down to the ground to feed." He has seen none of these Squirrels south of Sierra de Valparaiso, which he thinks forms their southern limit.

The skull shows no distinctive features by which *T. a. bulleri* can be separated readily from any of its near allies, except *macrorhabdotes.*

Types, Nos. 1972 and 1973, Am. Mus. Nat. Hist., ♀ ♀ ad., Sierra de Valparaiso, Zacatecas, August 2, 1889. Coll. Audley Buller.

Several of the skins are those of adult females; others are rather young, but nearly or quite full grown, the distinctness of the skull sutures indicating juvenility. The skulls give an average length of 36.6 mm. (1.44 in.), and an average greatest breadth of 23 mm. (.83 in.), the length ranging from 35.6 mm. (1.40 in.) to 37.6 mm. (1.48 in.). Probably a series of fully adult skulls would average about 38 mm. (1.50 in.). The form is thus decidedly larger than *T. quadrivittatus*, and distinctly smaller than either *dorsalis* or *townsendi.*

In markings and tone of coloration the series is remarkably uniform. In the younger specimens the pelage is softer and fuller, with slightly more rufous on the sides of the body and edges of the dorsal and facial streaks.

The broad, sharply contrasting light and dark facial markings, particularly the large black patch between eye and ear, and the almost entire absence of fulvous or rufous on the sides of the body, and the distinctly tricolored convex surface of the ear, are the strong distinctive marks of *T. a. bulleri.* In its narrow terete tail, and in the general character and color of the dorsal streaks, it most resembles *T. quadrivittatus*, from which in other respects it differs strongly. In its large ears, large postauricular spot of white, and small amount of rufous on the sides it somewhat resembles *T. macrorhabdotes*, from which, however, it differs in its narrow tail, blacker and less rufous dorsal and facial stripes, etc. *T. a. bulleri* more nearly resembles an unnamed form from the San Bernardino Mountains in Southern California, which I propose to call *T. merriami* (see below), in the tone of the ground colors of the body and in the facial markings. Thus No. 1967, a young male from Zacatecas, is in most respects similar to No. 1150, a female, from the San Bernardino Mountains, the two differing, however, on close comparison, in various important points. Another (No. 1311) from Donner, Cal., is also quite similar. Yet the San Bernardino series as a whole is very different from the Zacatecas series, and presents a wide range of variation in respect to the coloration of the dorsal surface, one phase shading strongly toward *T. macrorhabdotes*, the other in the direction of *T. dorsalis*. Another series from Donner, Placer Co., Cal., seems to be intermediate between *macrorhabdotes* and *quadrivittatus*, not only in general coloration, but in the form of the ears and the distinctness of the postauricular spot.

The pale San Bernardino form may be diagnosed as follows:

Tamias asiaticus merriami,* subsp. nov.

Size large; colors pale; the facial and dorsal markings not strongly contrasted; the ears high, pointed, and narrow; the postauricular spot small, gray, and comparatively inconspicuous. The gray of the sides, buttocks, and middle pair of light dorsal stripes has a pale olivaceous cast instead of rufous. The lower surface of the middle of the tail is deep rusty red.

Type, No. 1157, ♀ ad., San Bernardino Mts., Cal., June 10, 1887. Coll. F. Stephens.

The general color above is dull yellowish gray, mixed slightly on the middle of the sides of the body and in the dark dorsal and facial streaks with fulvous. The dorsal streaks are all very pale, the lower dark streak on each side being pale yellowish brown, but little darker than the general ground color of the dorsal surface; the lower (outer) light band (on each side) is pale gray, and thus quite distinctly outlined against the darker color on either side. The submedian dark streaks are pale fulvous brown, slightly mixed with blackish posteriorly, and clearly defined only between the shoulders and hips. The median light streaks are pale yellowish gray like the general surface above. The median dorsal streak runs from the crown to the base of the tail, rather indistinct and of a pale yellowish brown as far as the posterior border of the scapular region, and thence posteriorly more distinct, being much mixed with blackish. The dark facial streaks are pale brown, with only a very slight admixture of blackish. No. 1158, ♀ ad, is similar, except in being slightly paler.

---

* In honor of Dr. C. Hart Merriam, so well known for his excellent work in North American Mammalogy.

Three young specimens, one-half to two-thirds grown, agree essentially in coloration with the adults. The pelage is of course much softer, and the facial and dorsal markings a little sharper.

The two adults measured in the flesh, according to the collector's notes, as follows : No. 1158, ♀ ad., head and body, 5.40 in.; tail vertebræ, 4.40 in.; tail to end of hairs, 5.60 in. No. 1157, ♀ ad., head and body, 5.50 in.; tail vertebræ, 4.80 in.; tail to end of hairs, 6.00 in. The height of the ear is 12 to 12.7 mm. (.47 in. to .50 in.); the length of the hind foot, 33 mm. (1.30 in.).

All of the specimens were collected in the San Bernardino Mountains, Cal., June 10 to 14, 1887, by Mr. F. Stephens.

T. a. merriami may best be compared with *T. a. townsendi*, with which it nearly agrees in size and general style of markings, differing from it greatly, however, in its excessively pallid tints, and higher, narrower, more pointed ears. In its pale tints and tendency to obsolete markings it recalls *T. a. dorsalis*, though differing from it widely in all details. The general ground color resembles that of *T. a. bulleri*, from which it is sharply separated by the distinctness of the facial and dorsal markings of the latter, and in various minor points. It is much larger than *T. a. pallidus*, and although a pallid form, differs widely from true *pallidus* even in coloration.

Other specimens from the San Bernardino Mountains, collected by Mr. Stephens at the same time and place with those above described, are very different, being almost exactly intermediate between *T. a. macrorhabdotes* and *T. a. quadrivittatus*, some of them making a strong approach to the former, with which I at first identified them before receiving specimens of true *macrorhabdotes*. They are much larger than *quadrivittatus*, with ears three times as large, the dorsal stripes not continued so far posteriorly, and the shade of rufous on the sides and back of a very different tint. Specimens from Donner, Placer Co., Cal., collected by Mr. C. A. Allen, are exactly similar. This seems a well-marked form, nearer to *macrorhabdotes* than to any other, which eventually may require recognition by name.

As Dr. Merriam has remarked: "That this genus [*Tamias*] is peculiarly susceptable to environmental influences is amply attested by the number and perplexing characteristics of the incipient species already known from the United States."* In 1877† I considered the various North American forms of the *T. quadrivittatus* group as subspecies of *Tamias asiaticus* of Siberia, of which I then recognized five American subspecies, as follows: (1) *borealis*, (2) *quadrivittatus*, (3) *pallidus*, (4) *townsendi*, and (5) *dorsalis*, to which have been since added (6) *macrorhabdotes*, (7) *bulleri*, and (8) *merriami*. That these are all offshoots of a single circumpolar species seems to be beyond question. While we may not have now at hand all of the connecting links, it seems highly probable that they still exist, and that it is only a question of time and the further accumulation of material when we shall know the number of these forms desirable to name, their exact distribution, and their relationship. Many well-marked and easily definable forms will be found confined to very limited regions, and to peculiar environmental conditions. Years since, when working with a large but very inadequate amount of material, I was much puzzled by local forms, which I was then reluctant to name, but which now it seems to me would be a progressive step to recognize in our nomenclature.

The so-called *townsendi* of Northern California is a very different animal, for example, from the true *townsendi* of the coast region of British Columbia and the adjoining coast region of Washington and Oregon, whence came the original specimens on which *townsendi* was based. The *Tamias* from the coast region of Northern California seems to be already provided with a name, in the *hindsii* of the late Dr. J. E. Gray, who kept it separate from *townsendi* in his review of the genus in 1867, with apparently good reason. This form may thus well stand as

Tamias asiaticus hindsii, (*Gray*).

Tamias hindei (err. typ.) Gray, Am. Mag. Nat. Hist., X, 1842, p. 264.

Tamias hindsii Gray, Zoöl. Voy. Sulphur, 1844, p. 34, pl. xii, fig. 1; Ann. and Mag. Nat. Hist., 3d ser., XX, 1867, p. 435.

---

* Proc. Biol. Soc. Washington, Vol. III, p. 28.

† Mon. N. Am. Rod., pp. 779-809.

It differs from true *townsendi* in much smaller size, the much redder brown of the dorsal surface (dark reddish brown instead of pale yellowish brown), a larger and whiter postauricular spot, and the greater whiteness of the lower light-dorsal bands.

There are thus at least three, if not four, well-marked forms in the State of California alone,—*hindsii* from the northern coast region, *macrorhabdotes* from the Sierra Nevada Mountains, *merriami* from the San Bernardino Mountains, and a form between *macrorhabdotes* and *quadrivittatus* along the eastern border of the State. The Black Hills of Dakota, the Unitah and Bitterroot Mountains, and the plains of British Columbia each furnish peculiar forms, while the so-called *pallidus* and *quadrivittatus* inosculate in distribution over a wide area. The *dorsalis* type, of the arid regions of the southwest, presents an extreme phase, in its gray color, long, pointed ears, heavy, broad tail, its single well-defined dorsal stripe, broad fulvous subterminal zone of the pelage of the upper surface of the body, and in certain cranial characters. Probably the geographically far-removed *bulleri* will not prove to be wholly isolated from the others in habitat, nor from some of its allies in details of structure and coloration.

12. Mus rattus *Linn.*—A single specimen, about one-third grown, from Zapotlan, Jalisco, April 27.

13. Hesperomys mexicanus *De Sauss.*—One specimen, ♂ adult, from Sierra de Valparaiso, Zacatecas, collected July 27, I confidently refer to De Saussure's *H. mexicanus*, with which *H. melanophrys* Coues is probably identical, as he has himself suggested.

14. Hesperomys aztecus *De Sauss.*—Two specimens, both adult males, collected in the Sierra Nayarit, Jalisco, July 15, seem unquestionably referable to this species, agreeing perfectly with De Saussure's description. Whether Dr. Coues's series from Cape Saint Lucas, Lower California (Mon. N. Am. Rod., pp. 101, 102) are the same seems open to question, both geographically and on various obvious points of difference, particularly of coloration. The tail in *aztecus* is distinctly bicolor, not dull grayish, unicolor, as in the Cape Saint Lucas specimens.

15. Hesperomys leucopus sonoriensis (*Le Conte*).—A single mummified specimen, in very bad condition, agrees with *H. leucopus sonoriensis*, so far as the characters can be distinctly made out. It was collected at Zapotlan, Sierra Nevada de Colima, Jalisco, at an altitude of 13,500 feet, April 6, 1889.

16. Sigmodon fulviventer, sp. nov.

Type (and only specimen), No. 1975, Am. Mus. Nat. Mus., ♂ ad., Zacatecas, Mex., Aug. 17, 1889. Coll. Audley Buller.

Size of *S. hispidus*, but lighter and browner above, and ochraceous buff below instead of white; tail unicolor and, with the ears externally, well covered with hair, instead of naked. Pelage heavy, long, and very coarse, rather rigid, distinctly bristly on the sides of the neck and cheeks. Above strong yellowish brown, varied with lighter and slightly mixed with black, the general color being bright yellowish brown, a little darker on the middle of the back, and passing gradually on the sides into the strong ochraceous buff of the whole lower surface. Ears densely covered externally with short hairs, sharply bicolor vertically, the anterior half yellowish gray, the posterior half blackish or sooty. Fore and hind limbs strong buffy, feet above yellowish gray. Tail unicolor, blackish, slightly mixed with yellowish gray, the hairs dense and wholly concealing the annulations.

Head and body, 162.6 mm. (6.40 in.); tail, 108 mm. (4.25 in.); hairs at tip extending 7.5 mm. (.30 in.) beyond vertebræ; height of ear, 12.7 mm. (.50 in.); length of hind foot, 33 mm. (1.30 in.).

Compared with *S. hispidus*, the dusky basal portion of the under pelage of the dorsal surface is narrower, and the subterminal yellowish zone broader and more strongly yellowish brown. On the ventral surface the hairs are ochraceous nearly to the base, only the extreme base being pale plumbeous, and entirely concealed,—not seen through the surface, as in *S. hispidus*.

S. hispidus berlandieri, from Corpus Christi, Texas (Mr. Sennett's Coll.), differs from *S. hispidus* proper in being a little paler and grayer, with the tail and ears quite as naked as in *S. hispidus*. There is thus no approach in *S. h. berlandieri* to *S. fulviventer*, which differs from all other described forms of *Sigmodon* in its more hispid pelage, strongly yellowish brown upper parts, ochraceous lower parts, and the densely clothed ears and tail.

The skull is imperfect, lacking the basal portion of the cranium and the angular portion of the rami. The dention shows the specimen to have been fully adult. No appreciable differences are noticeable between the portions of the skull intact and the corresponding parts in the skull of *S. hispidus.*

S. hispidus (i. e., *berlandieri* et *toltecus*) has been reported from various points in Mexico, and southward to Veragua and Dueñas. Dr. Coues admitted both *berlandieri* and *toltecus* as possibly tenable subspecies, but his diagnoses of them show clearly that the specimens he had in hand from Southern Mexico and Guatemala have no near relationship with the above-described *S. fulviventer.* Neither does Mr. Alston (Biol. Centr. Am., p. 153), nor Mr. Tomes (P. Z. S., 1861, p. 281), consider their Mexican and Guatemalan specimens to differ from the so-called *berlandieri* of Baird. De Saussure's *Hesperomys* (*Dielomys*) *toltecus* (Rev. et Mag. Zool., 1860, p. 98) has clearly nothing to do with *S. fulviventer.*

Mr. Buller writes me that the present specimen was taken by Mr. W. B. Richardson. The latter states (in a recent letter to me): "The *S. berlandieri*, from Zacatecas, is quite common on the bare barren rocky pastures that surround the city, at an elevation of about 8000 feet above the sea."

ARTICLE XVII.—*Further Note on Amazilia æneobrunnea.* By FRANK M. CHAPMAN.

Since publishing a description of *Amazilia æneobrunnea* (antea, p. 163) I happened to handle a Bogota example of *Chrysolampis mosquitus*, and the "make up" of the skin at once rendered apparent the before unrecognized similarity in the color of the body of the two birds. A re-examination of the type of *æneobrunnea* showed that the *body* did belong to this species, while the head and neck were those of *Chlorostilbon haberlini.* In brief, *Amazilia æneobrunnea* is one of those taxidermal deceptions which not infrequently puzzle and sometimes, as in the present case, completely deceive unsuspecting ornithologists.

Mislead by the apparent relation of *æneobrunnea* to *A. lawrencei* —its parts in combination indeed resembling this species, as was shown in the original diagnosis—I unhesitatingly referred the bird to the genus *Amazilia ;* but these same parts taken singly present a very different appearance, and I have, therefore, the peculiar pleasure of placing the body in one genus and the head in another; and in neither case does the genus prove to be the one to which the *whole* was referred.

Further remark is evidently unnecessary ; but the experience apparently shows that the anatomy and construction of "Bogota" skins are as deserving of examination as their external characteristics.

ARTICLE XVIII.—*Remarks on Individual and Seasonal Variation in a large Series of Elainea from Chapada, Matto Grosso, Brazil, with a Revision of the Species of the restricted Genus Elainea.* By J. A. ALLEN.

INTRODUCTION.

The first part of this paper (pp. 184–195) relates to a large series of specimens of *Elainea*[*] collected at Chapada, Matto Grosso, Brazil, from an area of about five-miles' radius, by Mr. H. H. Smith and his assistants, during the years 1882–85. This series comprises 129 specimens, representing four species, as follows: *E. affinis*, 8 specimens; *E. gaimardi*, 4 specimens; *E. placens*, 10 specimens; *E. pagana-albiceps*, 116 specimens. Of these last, a part are referable to the true *E. pagana* of authors, and a still larger number to what is commonly recognized as *E. albiceps*, while the great bulk of the series is made up of specimens variously intermediate between these two forms. Despite much variation, it is impossible to separate the series into groups presenting any tangible characters by which they may be defined.

In order to satisfactorily determine the relationships of the puzzling birds represented in the Chapada series, I found it desirable to bring together as much material as possible. I am accordingly indebted to the kindness of Mr. Robert Ridgway for the series of *Elainea* contained in the U. S. National Museum (numbering about 200 specimens); to the Boston Society of Natural History, through Mr. C. B. Cory, Curator of the Department of Birds, for the types of several of the d'Orbigny-Lafresnaye species of the genus; and to Mr. William Brewster, of the Cambridge Museum of Comparative Zoölogy, for much needed material.

Thus about 400 specimens have been examined in the preparation of the present paper. Among them are the types of *Muscipeta albiceps* and *Muscicapa olivacea* d'Orb. & Lafr., *Muscicapa brevirostris* Wied, *Elainea frantzii* and *E. chiriquensis* Lawr., and *E.*

---

[*] Since this paper was put in type I have discovered that the original form of this name was "*Elænea*" (*cf.* Waterhouse, Ind. Gen. Av., 1889, p. 70), which, in accordance with the American Ornithologists' Union "Code," in respect to the emendation of names, should be adopted. We find it has been written more or less commonly *Elænia*, *Elaenea*, *Elainia*, *Elainea*, and *Elania*. Likewise *Cyclorhis* (see antea, pp. 123–135) should be written *Cyclarhis*, to conform to the original orthography.

cinerescens Ridgw. ; also authentic specimens of *E. subpagana* Scl. & Salv., *E. semipagana*, *E. griseogularis*, *E. pudica*, *E. gigas*, and *E. riisii* Scl., *E. barbadensis* Cory, and *E. obscura rustica* Berl. Also *E. pagana*, *E. mesoleuca*, *E. modesta*, and *E. rustica* as recognized by Lafresnaye ; "*E. modesta* Tsch," as recognized by Professor Philippi, and *E. mesoleuca* as recognized by Berlepsch. Several species, very desirable for examination in the present connection were, however, unfortunately lacking.

I.

INDIVIDUAL AND SEASONAL VARIATION IN THE CHAPADA SERIES OF *Elainea*.

The Chapada series of *Elainea* referable to the *E. pagana-albiceps* group presents a wide range of variation, not only in size and coloration, but especially in the size and form of the bill. Were there fewer specimens, representing the same range of variation, but with most of the "intermediates" left out, it would be quite easy to divide the series into several apparently well-marked species, and not hard to find names for them among the alleged species already described. Especially would this be the case were the specimens gathered from a wider geographical area, with the leading forms more or less localized. As the case stands, however, the specimens are all from a single very limited locality, and the gaps between the extreme forms are completely filled by specimens presenting every intermediate phase of variation. Besides, the variations in any one feature,—as in the form of the bill, in general size, the relative length of the outer primaries, or the relative length of wing to tail,—are found not to correlate with variations in other features ; so that while the specimens may be somewhat arbitrarily divided into series on general size, or on the form of the bill, the important variations in other features are not correlated with them but present all sorts of combinations of characters. Indeed, division on either size alone, or color alone, or exclusively on the form of the bill, cannot be made satisfactorily, since there is no point at which a separation can be made. The surprisingly large range of variation shown in this numerous series of *Elainea pagana* obviously has a general bearing, and may well be considered as of sufficient importance to warrant special treatment.

Variation in Color.—Arranging the series in the order of collecting, it is at once apparent that the variation in color is mainly seasonal, the two extremes in coloration representing respectively the months of March-April and September-October. Very few of the birds appear to have been collected in January, February, and June, but each of the other months is represented by a large series of specimens. The date of capture for the six brightest specimens is as follows: April 11, April 16, April 13, May 23, March 5, and May 11, in about the order of the intensity of coloration, four of the six specimens being marked as males. The November and December specimens are in much worn, ragged plumage, several of them too much so to be properly used in comparison. The October series is still in comparatively good plumage—not so worn as to obscure the normal coloration; from these eight specimens may be selected as typically representing this phase, collected at the following dates: September 20, and October 1, 3, 9, 9, 14, 17, and 18.

The average October bird (adult breeding phase) may be described as follows: Bill varying from brownish to dusky horn color, much lighter (often flesh color) at the base of the lower mandible. Above, dark greenish olivaceous brown, slightly lighter on the rump; concealed crest clear white; wing-bands and broad edgings of the quills pale greenish white, fading to nearly pure white on the inner secondaries; tail dusky, like the wings, edged with the color of the back, and slightly tipped with soiled whitish. Below, chin and middle of the throat nearly pure dark ashy; breast clear brownish ashy, fading to nearly pure white on the middle of the belly, the purity and area of the white variable in different specimens; sides, inner wing-coverts, and lower tail-coverts strongly washed with greenish olive, palest on the latter. Lores and narrow eye-ring whitish, tinged more or less (in different specimens) with olivaceous. November and December specimens differ mainly in the more worn character of the plumage, and less freshness of coloring.

The average March and April birds (representing the freshly moulted plumage) may be described as follows: Above scarcely different from the October specimens above described, but rather darker or browner and less green, with the edging of the quills broader and more decidedly light yellowish green. Below, throat gray; breast a more olivaceous (not brownish) gray, the lower throat and whole breast more or less conspicuously streaked with pale greenish yellow, produced by the feathers being margined by this tint; whole abdomen deep sulphury yellow, varying more or less in intensity in different specimens, but always strongly yellow in contrast with the decidedly, and often almost pure white of the abdominal area in October birds; sides darker olivaceous; inner wing-coverts and edge of the wing conspicuously yellow, like the abdomen.

May and June specimens are just intermediate between March-April ones and those taken in October; the yellow of the lower parts having become reduced at least one-half, while the yellow streaking of the breast, while paler, on the whole becomes rather more prominent. In August and September specimens the gray of the breast becomes less olivaceous, or of a purer gray; the yellow flammulations gradually become obsolete and the yellow of the belly becomes much lighter, thus fading gradually into the whitish of the breeding season. White is also more frequently present in the crest.

The concealed white crest seems to be largely a feature of the breeding season, when the feathers forming the whole crest become greatly lengthened, it being then present as a rule in both sexes, and either much less developed or wholly wanting during the greater part of the remaining months. It seems to be only exceptionally present from January to May, during which time the whole crest is less full, and the white at the base is either entirely absent or very slightly developed, only about one bird in five having it conspicuously present. The concealed white crest is certainly not a sexual feature, although seemingly rather more developed in the male than in the female. Neither are the males certainly distinguishable from the females by any feature of coloration or size (as will be shown later), though the males seem to average slightly brighter and larger.

Two birds, still partly in first plumage (Dec. 9 and Jan. 27), are dull brown above with only a faint tinge of olivaceous, the lower back and upper tail-coverts tinged with brownish rusty; lesser wing-coverts edged with brown. Below pale buffy white, the breast strongly grayish brown, throat ashy, under wing-coverts and bend of the wing buffy yellow.

Variation in Size.—The individual variation in size seems at first sight enormous, when the largest and smallest specimens of the series are compared, although as will be shown later, it is not greater than occurs in a similar series of specimens of well-known species, where no question of specific diversity can arise. As shown by the subjoined tables (pp. 188–190), the difference is in no way related to season, large and small birds occurring indiscriminately throughout the year, showing that the variation is not due to an influx, through migration, of larger or smaller birds at particular seasons. Neither is it to any great degree sexual, for though the females average slightly smaller than the males, both the largest and smallest specimens of the series are sexed by the collector as females. (The sexes given are in all cases taken from the sex marks placed on the original labels by the collector.)

As shown by Table I, the length of the wing in the male varies from 70.4 mm. (2.77 in.) to 82.6 mm. (3.25 in.), a difference of about half an inch, or 20 per cent. of the average. The tail ranges in the males from 58 mm. (2.30 in.) to 77.5 mm. (3.05 in.), or about six and a half tenths of an inch, or nearly 30 per cent. of the average. The length of the exposed culmen varies from 9.1 mm. (.36 in.) to 10.9 mm. (.43 in.), this variation being quite independent of general size.

The length of the wing in the female varies from 67.8 mm. (2.67 in.) to 85.9 mm. (3.38 in.), and the tail from 56.9 mm. (2.24 in.) to 80.5 mm. (3.17 in.)—a rather greater range than in the males.

As shown by the tables, the transition in size from the smallest to the largest is by almost imperceptable stages, if the last male from Table I, and the first two and last three females of Table II be omitted. Three of the four largest specimens rather strangely prove to be females, and, as they differ from the others only in size, can be regarded as merely exceptionally large individuals.

For obvious reasons, the specimens are arranged in the tables in the order of size, beginning with the smallest, taking the length of the wing as the basis of the arrangement. The measurements were all made by the same person (my friend and colleague, Mr. F. M. Chapman), and written first on the backs of the labels, the specimens being taken at random. After all were measured they were assorted according to size, and the measurements tabulated by transcribing them from the labels. In this way the element of personal equation becomes reduced to a minimum, with no unconscious or other bias in the direction of nicely graduated results. A careful inspection of the tables will render further comment on the subject of variation in size unnecessary.*

Variation in Size and Form of the Bill.—The measurements given in the accompanying tables fail to show adequately the extent and nature of what may be assumed as purely individual variation in the bill. To say that the variation in the length of the bill is 18 per cent. of its average length, and that the variation in breadth at the nostril is nearly a third of the average breadth, gives a less vivid impression of the extent and character of this variation than can be obtained by graphic representation.

---

* The length of the wing is the length of the folded wing taken in a straight line with dividers; the length of the tail is taken from the end of the "pope's nose" to the end of the longest feather; the "exposed culmen" means from a point in line with the frontal feathers to the tip, in a straight line measured with dividers; the width of the bill is taken at the nostrils.

I.—MEASUREMENTS OF 60 MALES OF *Elainea pagana*, TAKEN AT CHAPADA, MATTO GROSSO, BRAZIL.

Am. Mus. Nat. Hist. No.	DATE.	SEX.	WING.		TAIL.		BILL.			
							Exposed Culmen.		Width at Nostrils.	
			Mill.	Inch.	Mill.	Inch.	Mill.	Inch.	Mill.	Inch.
......	July 28, 1885,	♂	70.4	2.77	58.4	2.30	10.2	.40	4.6	.18
33,208	Apr. 10, 1883,	♂	71.0	2.80	61.0	2.40	9.9	.39	5.3	.21
33,189	" 17, "	♂	71.0	2.80	63.0	2.48	9.4	.37	5.3	.21
33,440	" 5, "	♂	71.0	2.80	63.0	2.48	9.7	.38	4.6	.18
33,220	Oct. 9, "	♂	71.0	2.80	62.5	2.46	9.4	.37	4.6	.18
33,448	" 3, 1882,	♂	73.0	2.88	66.0	2.60	9.7	.38	4.6	.18
33,226	May 11, 1883,	♂	73.6	2.90	64.8	2.55	9.7	.38	4.6	.18
33,438	Feb. 24, "	♂	73.6	2.90	63.5	2.50	9.1	.36	4.6	.18
33,437	Jan. 3, "	♂	73.6	2.90	65.8	2.59	9.9	.39	6.4	.25
33,168	Apr. 16, 1885,	♂	74.2	2.92	70.0	2.75	9.1	.36	5.6	.22
33,170	July 17, "	♂	74.9	2.95	68.5	2.70	10.4	.41	6.1	.24
33,174	" 16, "	♂	74.9	2.95	62.0	2.44	9.7	.38	4.8	.19
33,425	Aug. 19, "	♂	75.2	2.96	62.0	2.40	9.7	.38	5.1	.20
33,422	" 31, 1883,	♂	75.2	2.96	62.5	2.46	9.9	.39	4.6	.18

I.—MEASUREMENTS OF 60 MALES OF *Elainea pagana*, TAKEN AT CHAPADA, MATTO GROSSO, BRAZIL.—*Continued.*

Am. Mus. Nat. Hist. No.	Date.	Sex.	Wing.		Tail.		Bill.			
							Exposed Culmen.		Width at Nostrils.	
			Mill.	Inch.	Mill.	Inch.	Mill.	Inch.	Mill.	Inch.
33,419	Feb. 10, 1883,	♂	75.7	2.98	....	....	9.9	.39	5.3	.21
33,444	Sept. 11, 1885,	♂	75.7	2.98	66.0	2.60	10.4	.41	5.1	.20
33,218	Oct. 13, 1882,	♂	75.7	2.98	66.0	2.60	9.1	.36	5.1	.20
33,204	Feb. 24, 1883,	♂	75.7	2.98	61.0	2.40	9.4	.37	4.8	.19
33,209	May 4, "	♂	75.7	2.98	65.0	2.56	10.2	.40	5.6	.22
33,212	Sept. 26, 1885,	♂	75.9	2.99	64.0	2.52	9.7	.38	5.8	.23
33,221	Oct. 14, "	♂	76.2	3.00	63.5	2.50	9.9	.39	4.8	.19
33,219	" 17, 1882,	♂	76.2	3.00	65.5	2.58	10.2	.40	4.8	.19
33,210	Aug. 26, "	♂	76.2	3.00	66.0	2.60	10.2	.40	6.7	.27
33,217	Sept. 23, 1885,	♂	76.7	3.02	66.0	2.60	10.2	.40	5.1	.20
33,427	Oct. 9, 1883,	♂	76.7	3.02	66.2	2.62	9.7	.38	4.6	.18
33,223	Nov. 11, 1882,	♂	76.7	3.02	67.6	2.66	9.7	.38	5.0	.20
33,446	Sept. 8, 1885,	♂	77.2	3.04	64.5	2.54	10.2	.40	4.8	.19
33,421	Aug. —, 1883,	♂	77.2	3.04	68.5	2.70	9.9	.39	4.8	.19
33,424	" 28, 1885,	♂	77.2	3.04	69.9	2.75	10.2	.40	4.8	.19
33,442	" 15, 1883,	♂	77.2	3.04	67.0	2.64	10.2	.40	6.4	
33,178	" 26, 1885,	♂	77.5	3.05	71.1	2.80	10.2	.40	5.6	.22
33,215	Sept. 7, 1883,	♂	77.7	3.06	66.0	2.60	10.2	.40	5.1	.20
33,190	" 20, 1882,	♂	77.7	3.06	66.5	2.62	9.9	.39	4.6	.18
33,192	Mch. 6, 1883,	♂	77.7	3.06	72.4	2.85	9.7	.38	5.6	.22
33,426	Sept. 22, 1885,	♂	77.7	3.06	65.5	2.58	9.1	.36	4.6	.18
33,200	Aug. 26, "	♂	78.2	3.08	72.1	2.84	10.9	.43	5.6	.22
33,171	July 27, 1883,	♂	78.5	3.09	72.1	2.73	10.2	.40	5.8	.23
33,195	" 29, "	♂	78.5	3.09	72.1	2.74	10.2	.40	5.8	.23
33,228	Apr. 1, 1885,	♂	78.7	3.10	74.9	2.95	10.7	.42	5.6	.22
33,182	Sept. 7, "	♂	78.7	3.10	70.0	2.75	9.9	.39	4.6	.18
33,423	Aug. 28, 1883,	♂	78.7	3.10	68.9	2.71	10.7	.42	4.8	.19
33,202	Nov. 13, "	♂	78.7	3.10	74.7	2.94	9.9	.39	6.1	.24
33,192	May 1, "	♂	79.3	3.12	69.1	2.72	10.7	.42	5.6	.22
33,195	July 13, "	♂	78.7	3.10	71.1	2.80	10.2	.40	5.6	.22
33,201	Oct. 7, 1882,	♂	79.3	3.12	71.6	2.82	10.2	.40	5.6	.22
32,183	Sept. 22, 1885,	♂	79.3	3.12	71.6	2.82	10.2	.40	5.6	.22
33,192	May 1, 1883,	♂	79.3	3.12	69.1	2.72	10.7	.42	4.8	.19
33,211	Aug. 20, 1885,	♂	79.8	3.14	70.6	2.78	10.4	.41	4.8	.19
33,184	Sept. 8, "	♂	79.8	3.14	68.6	2.70	10.4	.41	5.6	.22
33,198	Aug. 17, 1883,	♂	79.8	3.14	73.6	2.90	10.2	.40	6.1	.24
33,185	Sept. 8, 1885,	♂	80.3	3.16	73.9	2.91	9.7	.38	5.6	.22
33,199	Aug. —, 1882,	♂	80.5	3.17	74.7	2.94	9.1	.36	4.6	.18
33,224	Dec. —, "	♂	8.8	3.18	71.1	2.80	9.9	.39	4.6	.18
33,181	Sept. 21, "	♂	81.3	3.20	73.7	2.90	10.7	.42	5.8	.23
33,175	Aug. 15, 1883,	♂	81.3	3.20	74.2	2.92	11.2	.44	6.4	.25
33,449	Oct. 1, 1882,	♂	81.5	3.21	70.6	2.78	9.1	.36	5.1	.20
33,196	July 22, 1885,	♂	81.8	3.22	71.1	2.80	9.9	.39	5.1	.20
33,203	....	♂	81.8	3.22	73.2	2.88	10.9	.43	5.6	.22
......	Oct. 4, 1882,	♂	82.6	3.25	77.2	3.04	10.9	.43	5.8	.23
33,177	Aug. 19, 1885,	♂	82.6	3.25	77.5	3.05	10.4	.41	6.1	.24
33,097	Sept. 10, "	♂?	89.7	3.53	81.8	3.22	10.7	.42	6.6	.26

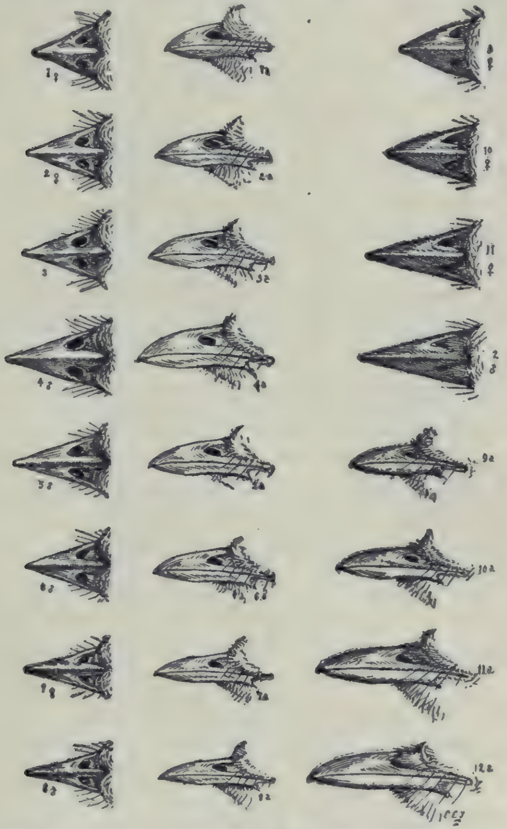
II.—MEASUREMENTS OF 30 FEMALES OF *Elainea pagana*, TAKEN AT CHAPADA, MATTO GROSSO, BRAZIL.

Am. Mus. Nat. Hist. No.	DATE.	SEX.	WING.		TAIL.		BILL.			
							Exposed Culmen.		Width at Nostrils.	
			Mill.	Inch.	Mill.	Inch.	Mill.	Inch	Mill.	Inch.
33,441	Apr. 18, 1883,	♀	67.8	2.67	56.9	2.24	9.1	.36	5.8	.23
33,227	Mch. 5, "	♀	67.8	2.67	63.5	2.50	9.7	.38	5.6	.22
33,206	Apr. 6, "	♀	69.6	2.74	60.0	2.35	9.7	.38	5.6	.22
33,207	" —, "	♀	69.6	2.74	57.2	2.25	9.4	.37	4.6	.18
33,431	Sept. 21, 1885,	♀	69.9	2.75	59.9	2.36	9.1	.36	4.6	.18
33,445	" 25, "	♀	69.9	2.75	62.3	2.46	9.7	.38	5.6	.22
33,430	Apr. 2, 1883,	♀	70.6	2.78	60.5	2.38	10.2	.40	4.6	.18
33,205	Mch. 17, "	♀	71.1	2.80	63.5	2.50	10.2	.40	5.6	.22
33,428	Oct. 17, 1882,	♀	71.1	2.82	61.0	2.40	9.7	.38	4.6	.18
33,187	" 28, "	♀	71.6	2.82	65.3	2.57	9.7	.38	6.4	.25
33,216	Sept. 26, 1885,	♀	71.9	2.83	62.3	2.45	9.9	.39	5.3	.21
33,166	Mch. 14, 1883,	♀	72.1	2.84	64.5	2.54	10.7	.42	6.4	.25
33,222	Oct. 29, 1885,	♀	72.4	2.85	63.0	2.48	10.2	.40	5.1	.20
33,439	Mch. 6, 1883,	♀	73.6	2.90	68.1	2.68	9.7	.38	5.6	.22
33,442	May 30, "	♀	73.6	2.90	66.6	2.62	10.2	.40	5.6	.22
33,172	July 28, 1885,	♀	74.7	2.94	68.6	2.70	9.7	.38	5.6	.22
33,180	Aug. 20, "	♀ ?	74.7	2.94	66.0	2.60	9.7	.38	4.6	.18
33,194	Mch. 8, "	♀	75.7	2.98	70.0	2.75	10.7	.42	6.6	.26
33,213	Sept. 22, "	♀	76.2	3.00	63.5	2.50	10.2	.40	4.6	.18
33,429	Nov. —, 1882,	♀	76.5	3.01	68.3	2.69	....	...	5.8	.23
33,186	Oct. 10, 1883,	♀	76.5	3.01	69.6	2.74	9.7	.38	5.6	.22
33,229	Apr. 17, 1885,	♀	76.5	3.02	70.6	2.78	9.1	.36	5.8	.23
33,443	Aug. 15, 1883,	♀	77.2	3.04	67.1	2.64	10.2	.40	5.6	.22
33,214	Sept. 23, 1885,	♀ ?	77.7	3.06	67.3	2.65	9.7	.38	5.1	.20
33,169	July 17, "	♀	78.0	3.07	71.1	4.80	9.7	.38	5.8	.23
33,188	Nov. 2, 1883,	♀	78.7	3.10	74.4	2.93	10.7	.42	5.8	.23
33,197	Aug. —, 1882,	♀ ?	80.3	3.16	71.6	2.82	10.2	.40	5.1	.20
33,225	" —, 1885,	♀	84.3	3.32	77.2	3.04	10.2	.40	6.4	.25
33,146	" 27, "	♀	84.8	3.34	79.8	3.14	11.2	.44	6.4	.24
33,096	May 23, 1883,	♀	85.9	3.38	80.5	3.17	10.2	.40	6.6	.26
Smallest male*............			70.4	2.77	58.4	2.30	10.2	.40	4.6	.18
Largest "			82.6	3.25	77.5	3.05	10.9	.43	5.8	.23
Average of 60 males ...			77.0	3.03	68.3	2.69	9.5	.374	5.4	.22
Smallest female*..........			67.8	2.67	56.9	2.24	9.1	.36	5.8	.23
Largest "			86.1	3.39	80.5	3.17	10.2	.40	6.6	.26
Average of 30 females..			74.7	2.94	66.6	2.62	9.6	.376	5.5	.22

I have accordingly selected for illustration three specimens showing extreme phases of variation, with five others intermediate in form, as shown in the accompanying figures (Figs. 1–8 and Figs. 1^a–8^a). The average form of the bill for the series is shown in Figs. 5–7, varying on the one hand to specimens shown in Figs. 6–8, where the bill is slender and attenuated (*E. albiceps* form), to the thick, broad (*E. pagana*) form, shown in Figs. 4, 3, and 2, and especially in Fig. 1, where the bill is again small (compare with Fig. 8), but very broad.* The intergradation in the size and form of the bill is as complete between the extremes figured as is the intergradation in general size, so well shown by the tables of measurements.

---

* These extremes are not the extremes of individual parts but of the specimens as a whole, or, more correctly, of the size as indicated by the length of the wing.



For purpose of comparison I have had drawn a corresponding series of variations in the bill of *Elainea affinis*, selected, however, from a much smaller series of Chapada specimens, but showing a parallel, if not a more striking, range of variation in the size and form of the bill.

---

* The specimens from which these figures are drawn are distinguished in the tables of measurements by the Museum number being printed in heavy-faced type.

Such variations within specific limits are, however, not rare, though doubtless the facts above presented will be viewed with surprise, if not incredulity, by those who have not made the subject of individual variation a matter of systematic investigation. Before attempting to apply practically the results and inferences naturally to be drawn from the examination of the present large series of *Elainea pagana*, I wish to refer briefly to an early paper* of mine on the subject of individual variation in birds, based on unequivocal material, namely, common birds of Eastern Massachusetts, including the following 10 species: *Sialia sialis*, *Galeoscoptes carolinensis*, *Harporhynchus rufus*, *Geothlypis trichas*, *Piranga erythromelas*, *Habia ludoviciana*, *Pipilo erythrophthalmus*, *Dolychonyx oryzivorus*, *Icterus galbula*, *Tyrannus tyrannus.* In making this investigation care was "taken to not only select specimens of the same sex, collected at the same locality, and as nearly as possible at the same season, but also such species as find their northern limit so near the locality at which they were taken as to obviate the complication of individual with geographical variation, which would result if the range of the species extended far to the northward of the locality in question" (l. c., p. 208). The variation in the length of the folded wing was found to range from about 15 to 21 per cent.; while the range of variation in the length of the tail amounted to from 14 to 23.4 per cent. The individual variation in the bill in several species is shown in plates iv, v, vi, vii, and viii of the work cited, in which are represented very striking cases of bill variation in *Dendroica striata* (pl. iv, figs. 15 and 16), *Mniotilta varia* (ib., figs. 12–14), *Seiurus noveboracensis* (ib., figs. 8–11), *Troglodytes aëdon* (ib., figs. 3–7), *Piranga erythromelas* (ib., figs. 19 and 20), *Tyrannus tyrannus* (ib., figs. 1 and 2), *Spinus tristis* (ib., pl. v, figs. 7–10), etc. In several of these species the variation is quite as great as in the two species of *Elainea* figured in the present paper.

Extreme phases of variation, either in general size or in the form of the bill, are not likely to be met with, or, if met with, to be duly recognized as such, unless the material in hand consists of very large series of specimens of the same species from a single locality—a case rarely happening in collections of foreign birds.

---

* On the Mammals and Winter Birds of East Florida, with an examination of certain assumed Specific Characters in Birds, etc. Bull. Mus. Comp. Zoöl., Cambridge, Mass., Vol. II, No. 3, April, 1871, pp. 161–450, pll. iv–viii.

In the birds of one's own immediate region, the characters of the species are so well known, and the species generally so familiar, that any individual instances of departure from the normal standard are not apt to attract the attention they would if occurring among birds from a distant and little known region. The Smith Collection of Chapada birds happily furnishes series of from 30 to 150 specimens of a large number of the commoner species of the region, including many belonging to such difficult families as the Tyrannidæ, Dendrocolaptidæ, and Formicariidæ, an examination of which shows that the case of *Elainea* is not an exceptional one in the matter of wide range of variation in color, size, and other features. Among the more interesting and instructive of these large series, which we hope to treat later, may be mentioned *Empidochanes fuscatus*, *Empidonax bimaculatus*, *Empidonomus varius*, *Heteropelma flavicapillum*, *Thamnophilus radiatus*, *T. ambiguus*, *Dysythamnus mentalis*, *Herpsilochmus pileatus*, etc. The color variations in some of these species, taking only fully adult birds, include a range so wide as to cover several currently recognized species, some of which are well-marked geographical forms, characteristic of large areas within the general habitat of the species. The fact that they can be exactly matched in Chapada specimens does not, therefore, imply the necessity of their reduction as pure synonyms. In fact, in cases of closely related geographical forms (subspecies) it often happens that the range of individual variation in either form overlaps the characters commonly recognized as distinctive of the forms in question. It is indeed sometimes doubtful whether a supposed straggler of a given form taken out of its normal habitat is to be recorded as a straggler or as an aberrent resident bird.

Before proceeding to a practical application of the facts presented by the Chapada series of *Elainea pagana*, a further and more explicit account of the variations met with may be presented, which may be taken as bearing directly upon the conclusions presented in Part II of the present paper.

Crest.—The form, length of the feathers, their color, and the presence or absence of white at the base of the crest-feathers having frequently entered into specific diagnoses, and often forming one of the chief characters relied on for the discrimination of various species, the following points deserve attention: As already said, an increased development of the crest characterizes the breeding season, when the crest becomes much fuller and the feathers forming it longer, with generally the concealed white at the base of the crest conspicuously developed. Some specimens have a very full crest with no white whatever; in others the white extends almost to the tips of the central feathers, the crest being very full and the whole interior snowy white; in others the feathers of the crown not only have no white, but are not appreciably lengthened; in others the feathers are not much lengthened though showing some white. In many instances the crest-feathers were still growing when the specimen was killed, the sheaths still remaining at the base of the shafts, the dates of capture in these cases conclusively showing that the white at the base of the crest-feathers is a seasonal feature. The crown may be strictly concolor with the back, or much darker, the latter being the usual condition.

Back.—In a few specimens the dorsal surface is clear greenish olive; generally it is dusky olive, or olivaceous brown, varying to olivaceous gray, or grayish brown with no olive shade, or even, in worn plumage, to clear fuscous gray.

Rump.—The lower back and upper tail-coverts are occasionally concolor with the back, but generally lighter and browner, in some specimens distinctly rufescent.

Wings.—The wing-bands and the edges of the outer secondaries vary from pure white to grayish white, or even strongly greenish white in freshly moulted birds. A third quite distinct wing-band is sometimes present, formed by the light tips of the outer row of lesser coverts.

Eye-ring and Lores.—The lores and eye-ring are generally whitish, varying to greenish white or pale yellowish; sometimes not appreciably different from the color of the surrounding parts. Especially is this true of the loral region.

Throat and Fore-neck.—The throat is commonly gray, either pure gray or mottled with white, varying occasionally to nearly pure white, or to dark gray tinged, particularly on the sides, with olive, or even greenish olive. Fore-neck similar to the throat, but usually darker, less whitish, and more frequently faintly washed with olive.

Lower Parts.—Breast and lower parts generally gray, a little lighter on the middle of the belly, and faintly streaked with pale yellow, varying to breast pale gray, abdomen nearly pure white, and the sides olivaceous grayish brown, more or less streaked with pale yellow, or with no obvious streaking; or the whole lower parts sulphur yellow, slightly more olivaceous gray on the sides, coarsely streaked on the breast with pale yellow and olivaceous gray.

Primaries.—The wing formula is variable, but the third primary is usually the longest, sometimes the fourth, sometimes the second; often the second, third and fourth are equal.

Relative Length of Wing and Tail.—The length of the tail to the length of the wing averages as 88 to 100, but varies from 83 to 100 to 91 to 100.

From the foregoing it is obvious that exact information in respect to the date of capture of any specimen of *Elainea* is an important factor in discussing its status and affinities, and that without such exact data the investigator is bereft of important aid in his work; and it hence follows that specimens without date of capture are of comparatively little value, and may be very misleading. As will be shown later, series of specimens from other localities, when accompanied by dates of collection, abundantly bear out the inferences based on the Chapada series.

II.

ON THE SPECIES AND SUBSPECIES OF THE RESTRICTED GENUS *Elainea*.

In the group here under consideration I include all of the species left in the genus *Elainea* as recently restricted by Messrs. Salvin and Godman in their "Biologia Centrali-Americana" (Aves, Vol. II, Dec., 1888, p. 26), having no occasion at present to deal with the species placed by these authors in their genus *Miopagis*.*

---

*I fail, however, to appreciate the necessity of thus dividing the species heretofore commonly placed under *Elainea*, especially as I find the principal character, that of the form and position of the nostril, is by no means distinctive of the new genus *Myopagis*.

Elainea pagana.

Subsp. *pagana.*

"*Muscicapa pagana* Licht., Verzeich. der Doubl. des Zool. Mus. der Königl. Univ. zu Berlin, 1824, p. 54." (*Hab.* Bahia.)

Elainea pagana "Cab., in Schomb. Guiana, III, 1848, p. 701"; Burm., Thiere Bras., II, 1856, p. 476; Cab. & Heine, Mus. Hein., ii, 1859, p. 59; Scl., P. Z. S., 1861, p. 406; *ib.*, 1870, p. 834; Cat. Bds. Brit. Mus., XIV, 1888, p. 137; Euler, J. f. O., 1867, p. 228 (nesting habits); Pelzeln, Orn. Bras., ii, 1869, p. 106; Berlepsch, J. f. O., 1884, p. 301; Salv. & Godm., Biol. Cent. Am., Aves, II, 1888, p. 34, and of authors generally.

Platyrhynchus paganus Spix, Av. Bras., II, 1825, p. 13, fig. 1.

Muscicapa brevirostris Wied, Beitr. zur Naturg. Bras., III, ii, 1831, p. 799 (type examined).

Muscipeta modesta Wied, Beitr. zur Naturg. Bras., III, ii, 1831, p. 923 (Bahia).

Elainea modesta Burm., Thiere Bras., II, 1856, p. 478 (=*Muscipeta modesta* Wied).

Elainea spectabilis Pelz., Orn. Bras., ii, 1869, p. 176 (Goiaz, one specimen).

?*Elainea ridleyana* Sharpe, P. Z. S., 1888, p. 107; Scl., Cat. Bds. Brit. Mus., XIV, 1888, p. 139.

Subsp. *subpagana.*

?*Elainea incompta* Cab. & Heine, Mus. Hein., ii, 1859, p. 59 (*juv.?* one specimen, Carthagena).

Elainea subpagana Scl. & Salv., Ibis, 1860, p. 36; Scl., P. Z. S., 1861, p. 406; and of various authors prior to 1869.—*Cf.* Scl., P. Z. S., 1870, p. 834, and Cat. Bds. Brit. Mus., XIV, 1888, p. 138.

Elainea semipagana Scl., P. Z. S., 1861, p. 406.—*Cf.* Scl., P. Z. S., 1870, p. 834, and Cat. Bds. Brit. Mus., XIV, 1888, p. 138.

Elainea chiriquensis Lawr., Ann. Lyc. Nat. Hist. New York, VIII, 1865, p. 176 (types examined); Salv., P. Z. S., 1867, p. 147.

Subsp. *martinica.*

Muscicapa martinica Linn., Syst. Nat., ed. XII, 1766, p. 325 (based on *Muscicapa martinicana cristata*, Brisson, Orn., II, p. 362, pl. 36, fig. 2). "*Hab.* in Martinica."

Tyrannula martinica Cassin, Proc. Acad. Nat. Sci. Phila., 1860, p. 375.

Elainea martinica Taylor, Ibis, 1864, p. 169; Scl., P. Z. S., 1871, p. 271; Salv. & Godm., Biol. Cent. Am., Aves, II, 1888, p. 36 (Cozumel Isl.); Cory, Auk, III, 1886, 230; Bds. West Ind., 1889, p. 117.

Muscicapa albicapilla Vieill., Ois. d'Am. Sept., p. 66, pl. 37.

Elainea riisii Scl., P. Z. S., 1860, p. 314; *ib.*, 1870, p. 834. (St. Thomas.)—*Cf.* Scl., P. Z. S., 1871, p. 271.

Elainea cinerescens Ridgw., Proc. U. S. Nat. Mus., VII, 1884, p. 180 (types examined). (Old Providence.)

?*Elainea barbadensis* Cory, Auk, V, 1888, p. 47; Bds. West Ind., 1889, p. 292. (Barbadoes.)

Subsp. *albiceps.*

Muscipeta albiceps d'Orb. & Lafr., Syn. Av., p. 47 (Mag. de Zool., 1837) (in part; types examined); d'Orb., Voy., Ois., 1844, p. 319.

Elainea albiceps Scl., P. Z. S., 1858, p. 71; *ib.*, 1861, p. 406; *ib.*, 1870, p. 834; Cat. Bds. Brit. Mus., XIV, 1888, p. 141; Tacz., Orn. Pér., II, 1884, p. 263; Berl. & Jher., Zeits. f. ges. Orn., 1885, p. 133; Scl. & Huds., Arg. Orn., I, 1888, p. 145; and of authors generally except references to Northern South America.

Elainea modesta Tsch., Wiegm. Arch. f. Nat., 1844, i, p. 274; *ib.*, Faun. Per., Aves, 1845–46, p. 159 (Peru; nec *Muscipeta modesta* Wied, 1831, based on Bahia specimens); Scl., P. Z. S., 1861, p. 407; Cab. & Heine, Mus. Hein., ii, 1859, p. 59; Burm., J. f. O., 1860, p. 246; Cab., J. f. O., 1878, p. 197.—*Cf.* Scl., P. Z. S., 1867, p. 327.

Elainea griseogularis Scl., P. Z. S., 1858, p. 554, pl. 146, fig. 1 (Riobamba, Ecuador); Berl. & Tacz., P. Z. S., 1884, p. 296; *ib.*, 1885, p. 90.—*Cf.* Scl., P. Z. S., 1867, p. 327.

Elainea mesoleuca Cab. & Heine, Mus. Hein., ii, 1859, p. 60 (Rio Grande, Brazil); Berl. & Jher., Zeits. f. ges. Orn., 1885, p. 132 (*juv.*).

Elainea cristata Pelz., Orn. Bras., ii, 1869, p. 177 (Goiaz).

Elainea albiventer Pelz., Orn. Bras., ii, 1869, p. 177 (Ypanema, Goiaz).

Elainea parvirostris Pelz., Orn. Bras., ii, 1859, p. 178 (*juv.*).

Elainea strepera Cab., J. f. O., 1883, p. 215 (Tucuman).

Elainea gracilis Tacz., Orn. Pér., II, 1888, p. 271 (Chirimoto, Peru—two specimens).

Elainea pagana.—The type of Lichtenstein's *Muscicapa pagana*, the *Elainea pagana* of authors, is said to have come from Bahia, which thus becomes the type locality for the species. I have before me six specimens labeled as from Bahia, but they are entirely without dates. One is evidently a bird of the year, the others are fully adult, some of them in more or less worn plumage. All except the young bird have the crest feathers white at the base. They vary much in size, the length of the wing ranging from 77.2 mm. (3.04 in.) to 85.3 mm. (3.36 in.), excluding the young bird, which has the wing only 68.6 mm. (2.70 in.). In color the series is quite uniform, being clear grayish fuscous above, with very little tinge of olive, and with the throat and breast pure light gray, and the abdomen clear pale yellow.

Several other specimens from Eastern Brazil are similar, but a series of 8 from Trinidad, and others marked "Cayenne" (probably=Trinidad, from the make of the skins), and also most of the Chapada birds referable to *pagana* are more olive above, and the yellow below is paler or more greenish. The Trinidad birds can hardly be distinguished from many of the Chapada examples, and, strange to say, Grenada specimens, in corresponding plumage, are scarcely distinguishable from either Trinidad or Chapada specimens.

Elainea pagana subpagana.—Nine specimens from Mexico and Central America differ from the Bahia series in averaging slighter smaller, and in being more olivaceous and browner above, and considerably deeper yellow below. The largest and deepest colored specimen is labeled "City of Mexico," and is evidently a fall specimen in freshly moulted plumage. A Panama specimen, dated "21 Dec.," is similar in color but considerably smaller. These two far exceed in depth of coloring, particularly in the intensity of the yellow below, any other specimens in the series. An August specimen (Aug. 4), from Orizaba, in worn plumage, is markedly different from any of the Bahia specimens, taken at any season, the colors being deeper and brighter. The other specimens from Panama and Costa Rica differ decidedly as a series from any corresponding number from Southern Brazil, in the manner already indicated. A Bogota specimen and the Chiriqui series are paler, and intermediate between Brazilian and Central American specimens. Obviously no hard and fast line can be drawn between the Central American and Brazilian forms, yet they seem different enough to warrant recognition as well-marked geographical races, the birds from Panama northward being true *subpagana*, the Brazilian birds *pagana*, and the birds from Northern South America intermediates, doubtless covering several minor local forms.

Of four specimens from Chiriqui two (without date) are in fresh autumnal plumage, and two (dated March) are in the paler plumage of the breeding season. These latter are the types of *Elainea chiriquensis* Lawrence. Three of the four are rather smaller than the Bahia birds; two of them have been labeled *E. subpagana* by the late Professor Baird.

Elainea incompta Cab. & Heine I have little doubt is a young bird in the plumage following the first moult.

Elainea pagana martinica.—The type of Brisson's *Muscicapapa martinicana cristata*, the basis of the *Muscicapa martinica* Linn., and of the *Elainea martinica* of modern authors, came from the Island of Martinique. About 50 specimens of what is commonly called *E. martinica* are before me, representing 16 different islands. Fortunately a large proportion of the specimens are labeled with the date of collection, and the dates cover nearly all the months of the year. The most striking fact brought out by an examination of this material is the great amount of seasonal variation in color. Winter birds, from whatever locality, show much more olive green in the dorsal plumage, and a much stronger wash of yellow below, than summer specimens, in which these tints are sometimes wholly absent, and of which generally only a faint trace remains. The white in the crest appears to be at all times strongly developed, being entirely wanting in none of the specimens examined.

Birds from the different islands present much variation. Grenada birds, and some Martinique examples, can be exactly matched, as already said, by numerous specimens in the Chapada series, and it is almost a question (as already noted by Mr. Sclater, P. Z. S., 1871, p. 271), whether the Grenada bird should not be referred to true *pagana*. Cozumel and Grand Cayman specimens come very close to Grenada specimens, when birds taken at the same season are compared. Specimens from Tobago and the Windward Islands, from St. Vincent to St. Eustatius and Saba, and also St. Thomas, are paler, with less olive above and less yellow below, which latter is also more of a greenish shade. April specimens from Old Providence Island (= *E. cinerescens* Ridgw.) are the palest and grayest of the series, though closely matched by some St. Eustatius specimens (without date—probably summer) and Cozumel summer specimens.

Four specimens from Barbadoes (representing *E. barbadensis* Cory) are quite different in color from any others, being browner above and grayer below, with a faint tinge of buff instead of yellow on the abdomen and crissum. The wing-bars are brownish white, very strongly so in two (apparently young birds), in which the white at the base of the crest-feathers is also edged with brownish, just as in young specimens of true *pagana* it is often tinged with pale greenish yellow. In size these specimens are not larger than specimens from Martinique and Dominica.

In *martinica*, as in the other forms, the bill varies much in size, shape, and color, but averages longer, more attenuated, and blacker than in either *pagana* or *subpagana*. *Martinica* also averages larger, the wing seldom falling below 76.2 mm. (3.00 in.), and frequently reaching 86.4 mm. (3.40 in.), with a maximum of about 87.6 mm. (3.45 in.), and an average of 81.3 mm. (3.20 in.). True *pagana* attains nearly the same maximum, but the wing less frequently exceeds 81.3 mm. (3.20 in.), and the average falls to 79.0 mm. (3.11 in.), excluding altogether the Chapada series.

It is probable that large series from different islands, when compared, will be found to present slight average differences, as in the case of other birds of similar distribution, but at present * lack of material renders an attempt to discriminate such forms impracticable.

Elainea pagana albiceps.—*Muscipeta albiceps* d'Orb. & Lafr. (=*Elainea albiceps* of more recent authors) proves to be a composite form, judging by alleged types in the Lafresnaye Collection, kindly loaned me for examination by the Boston Society of Natural History. The localities are given in the original description, and by d'Orbigny in the "Oiseaux" of his "Voyage," as Rio de Janeiro, Yungas (Bolivia), and Tacna (Peru). The specimens are Nos. 4679, 4680, and 4681 of the Lafresnaye Collection. No. 4680 is a typical *E. pagana*, and is doubtless the Rio specimen. The other two agree in color, and in the character of the bill, but differ considerably in size; they agree fairly well, however, with what is now currently recognized as *E. albiceps*. It is of course impossible to decide which specimen is from Yungas and which from Tacna. The original description of *albiceps* will apply about as well to *pagana* as to *albiceps*. In fact, these authors seemed to think their *albiceps* was probably the same as *pagana* of Lichtenstein, as they observe, "*Muscicapæ paganæ* Licht., n.º 562, descriptioni nimium propre accedit; sed erecta basi albescens non ibi citatur" (l. c.). The two "*albiceps*" specimens seem also to be the same as *E. modesta* Tsch.

---

* Owing to Mr. Cory's absence from the country at the time this paper was written, I had not the opportunity of comparing his immense West Indian series of *martinica* with the other material in hand. I had, however, previously examined it cursorily; and he agrees with me that its use in this connection would not have materially affected the conclusion I have reached without it.

Mr. Sclater considers *E. albiceps* as ranging throughout "all South America, except Colombia," and adds: "The characters of this variable species are taken from specimens obtained in Southern Peru by Whitely, which agree nearly with d'Orbigny's types * in the Paris Museum" (Cat. Bds. Brit. Mus., XIV, p. 142). In the present connection I propose to restrict *albiceps* to the Andean region, from Colombia and Ecuador southward, including Peru, Bolivia, Paraguay, the extreme southern part of Brazil, and the region thence southward to the Straits of Magellan. From this region I have, altogether, a large series of specimens, in which I include about one-third of the Chapada series. As thus restricted it is a rather smaller form than *pagana*, with a much smaller, slenderer bill, much narrower at the base, laterally more compressed and more attenuated. The width of the bill at the middle of the nostrils averages 4.3 mm. (.17 in.) against 5.6 mm. (.22 in.) for the same measurement in true *pagana*. In the breeding season it differs from *pagana* in being much greener above, the throat and breast a deeper, darker gray, the sides more greenish olivaceous, the middle of the belly white or whitish instead of pale yellow, in some specimens, and particularly on the sides and crissum, washed faintly with pale yellowish green, or greenish yellow, very different from the yellow of the same parts in Bahia specimens of *pagana*. Specimens with the length of the wing above 76.2 mm. (3.00 in.) are rather infrequent, the average being about 74.2 mm. (2.92 in.). In the fresh plumage (soon after the moult) the throat and breast are faintly streaked with pale greenish yellow, and the belly is strongly tinged with the same color.

---

* How many *alleged* types of *M. albiceps* d'Orb. & Lafr. are still extant? There are *three*, as already stated, ***marked as types*** in the Lafresnaye Collection!

My series includes 9 specimens from Patagonia (taken Oct.–Jan.), 4 from Buenos Ayres and Uruguay (Oct.–Dec.), 3 from Southeastern Brazil (without date), 5 from Chili (without date), and some 30–40 from Chapada. About one-half of the Chapada specimens may be fairly referred to *pagana*, and one-third to *albiceps*, leaving about one-sixth as intermediates, varying in all possible ways toward either form. Several of the Chapada birds are so exactly like Grenada and Dominica birds (*martinica*) that, as said above, without the labels, it would be impossible to say to which locality they should be referred. Again, several specimens in the Chapada series are not distinguishable from some of the Costa Rica specimens of *E. frantzii!* A young specimen in the Lafresnaye collection labeled "*Elainea modesta* Tschudi, Colombia" I am in doubt whether to consider *E. frantzii* or *E. albiceps*. Of two Ecuador specimens one is typical *albiceps*, while the other appears to be better referred here than elsewhere; it has been labeled "*E. modesta*" by Mr. Sclater.

As already shown (Tables I and II), narrow-billed and wide-billed birds occur at Chapada throughout the year, as also do short wide-bills and long wide-bills, and long narrow-bills and short narrow-bills, although the latter are in most cases obviously rather young birds. The differences in color are, of course, mainly seasonal, but a specimen combining a wide bill with much yellow below is my criterion for referring any of the Chapada birds to *pagana*,—a ruling, of course, entirely arbitrary. Only the smallest billed specimens, however, have the bill as small as the average bill in specimens from further south.

Finally, in respect to the Chapada series, I at one time set aside a series of the narrow, slender billed birds as *E. albiceps*, a smaller series (about 5 specimens) as *E. spectabilis* Pelz., and a few others as true *pagana;* but further examination showed no lines of demarkation, these several series merging in all possible ways into a great residuum, many of the components of which I still find it impossible to satisfactorily allocate. I think, however, I can select from the series specimens which clearly represent the various species synonymized above under *pagana* and *albiceps.*

The *Elainea mesoleuca* Cab. & Heine, and of authors, I have no doubt, is represented in the Chapada series by a number of young birds in presumably the plumage following the first moult, in which the upper parts are deep greenish olive, with generally no white in the crest, the wing-bars greenish white, the throat and breast deep dark gray, the latter more or less, and the sides strongly washed with greenish, the belly, lower tail-coverts, and under wing-coverts washed with yellowish green, with also the sides of the throat (malar border) dusky greenish. None of the Chapada birds are quite so green, either above or below, as a Taquara specimen in the National Museum Collection (No. 108,237), received from Count v. Berlepsch, labeled *Elainea mesoleuca ;* but the resemblance is so close as to leave no doubt of their identity ;—especially in view of the fact that ordinary *albiceps* is rather greener in the more southern specimens as compared with Chapada examples. Mr. Sclater suggestively observes : "Some specimens of *E. albiceps*, in which the vertical spot is absent, come very near this species [*E. mesoleuca*], and have caused me some dfficulty . . . . I am by no means sure that they are anything more than females and young of *E. albiceps.*" Berlepsch also mentions (l. c.) specimens from Taquara intermediate between *E. albiceps* and *E. mesoleuca*, and raises the question as to whether they are to be considered as hybrids between these two species, or whether *E. albiceps* and *E. mesoleuca* should be united as one species.

Elainea gigas.

Elainea albiceps Scl., P. Z. S., 1860, p. 71 (nec d'Orb. & Lafr.).
Elainea gigas Scl., P. Z. S., 1870, p. 831 ; Cat. Bds. Brit. Mus., XIV, 1888, p. 140; Tacz., Orn. Pér., II, 1844, p. 265.

This species, while resembling *E. pagana* in a general way, seems perfectly distinct from it by its much larger size, its generally darker and more olivaceous upper plumage, the deeper olivaceous of the breast and sides, brighter yellow of the belly, and particularly by the olive gray lower tail-coverts, edged with pale yellowish. The single specimen before me referable to this species is from Ecuador, and measures as follows: Wing, 99.1 mm. (3.90 in.); tail, 36.4 mm. (3.40 in.); culmen, 12.7 mm. (.50 in.); width of bill at nostrils, 6.4 mm. (.25 in.). The conspicuously white crest feathers have the white faintly tinged with pale greenish yellow.

Elainea fallax.

Elainea fallax SCL., P. Z. S., 1861, p. 407 (no description); *ib.*, 1870, p. 832; Cat. Bds. Brit. Mus., XIV, 1888, p. 147; CORY, Auk, III, 1886, p. 231; Bds. West Ind., 1889, p. 118.

This small Jamaican form is very distinct from any other species of the genus. In coloration it most resembles *E. frantzii*, from which its small size and the large amount of concealed white in the crest at once distinguish it. The three specimens before me representing the species call for no special remark.

Elainea frantzii.

Elainea frantzii LAWR., Ann. Lyc. Nat. Hist. New York, VIII, 1865, p. 172; *ib.*, IX, 1868, p. 112; SCL. & SALV., P. Z. S., 1879, p. 513; SCL., Cat. Bds. Brit. Mus., XIV, 1888, p. 145; SALV. & GODM., Biol. Cent. Am., Aves, II, 1888, p. 36.

Elainea pudica SCL., P. Z. S., 1870, p. 833; BERL., J. f. O., 1884, p. 302.—*Cf.* SCL., P. Z. S., 1879, p. 513.

This species finds its nearest ally in *E. obscura* (d'Orb. & Lafr.); indeed, some specimens of *E. obscura* "*rustica*" Berlepsch would be hard to distinguish from certain specimens of *E. frantzii*, were the labels removed. *E. obscura* is generally darker above, with a rather larger and blacker bill, and less olive on the throat, which latter specimens of *E. frantzii* in worn plumage often also lack. The individual variation in the two species, as regards general size, the size and form of the bill, and the coloration, distinctly overlap. Were it not that a supposed considerable interval where neither occurs separates their respective habitats, it would not seem rash to consider them as merely subspecies of one species. While *E. obscura* is supposed to never have white in the crown, 14 of my 25 specimens of *E. frantzii* are also without it, and in the other 9 there is generally only a trace of white, which in several is hardly distinguishable. In none is it nearly so much developed as in average adult birds of the *E. pagana* group, although several of the *E. frantzii* specimens were taken late in April, in worn breeding plumage.

E. pudica Scl. being now admittedly the same as *E. frantzii*, the range of the latter extends southward to the western central portion of Colombia, and eastward at least to Merida, Venezuela. *E. obscura* is reported common as far north as Central Peru, but between this point and Central Colombia I have met with no record of its occurrence. This region is, however, occupied by *E. pallatangæ* Scl.,—a species unknown to me and which I cannot place, though apparently it is more nearly allied to the *E. pagana* group than to *E. obscura* and *E. frantzii*. As a comment on the close relationship of the last two, however, I may refer to a specimen in the National Museum collection (No. 88,441) received from Berlepsch. It is one of Stolzmann's Tambillo specimens, bearing still the collector's label as well as that of Count v. Berlepsch; it is marked "♀, 11 Sept., 1877," being thus in pretty fresh, highly colored plumage. It was originally identified (apparently by the collector) as *E. albiceps*, which name is changed to *obscura*. On the Berlepsch label *Elainea obscura* (Lafr. & d'Orb.) was originally written in ink by Berlepsch, and later changed (in pencil) by some one (apparently Mr. Ridgway) to *frantzii*. No one would question the correctness of the latter identification, except on the ground of locality, it agreeing closely with *E. frantzii* in fresh plumage, in both size and coloration, the bill included. It also agrees in size with the smaller Taquara specimens. Doubtless later exploration in Northern Peru and Ecuador will show that *E. frantzii* and *E. obscura* merge together, geographically and otherwise, somewhere in this intermediate region.

Elainea obscura.

Muscipeta obscura D'ORB. & LAFR., Syn. Av., p. 48 (Mag. de Zool., 1837). Yungas, Bolivia.

Elainea obscura CAB., in TSCH. Faun. Per., Aves, 1845–46, p. 158; CAB. & HEINE, Mus. Hein., ii, 1859, p. 60; SCL., P. Z. S., 1870, p. 835; Cat. Bds. Brit. Mus., XIV, 1888, p. 152; ? PELZ., Orn. Bras., ii, 1869, p. 108; TACZ., Orn. Pér., II, 1884, 270.

Muscicapa olivacea D'ORB. & LAFR., Syn. Av., p. 54 (Mag. de Zool., 1837). Yungas, Bolivia; type examined.

Elainea olivacea SCL., P. Z. S., 1859, p. 46 (in text); *ib.*, 1861, p. 408.—*Cf.* SCL., P. Z. S., 1870, p. 835.

Muscipeta guillemini D'ORB., Voy., Ois., 1833-44, p. 319 (= *M. obscura* D'ORB et LAFR., here renamed).

Muscicapara boliviana D'ORB., Voy., Ois., 1833-44, p. 328 (= *M. olivacea* D'ORB. & LAFR., here renamed).

Elainea obscura rustica BERL. & JHER., Zeitsch. f. ges. Orn., 1885, p. 132.

Elainea rustica SCL., P. Z. S., 1861, p. 408 (= *E. obscura* CAB.).

Muscipeta obscura d'Orb. & Lafr. (= *E. obscura* of recent authors) was described from specimens obtained in the Province of Yungas, Bolivia, and is said to be common on the eastern slope of the Bolivian Andes. Their *Muscicapa olivacea* (= *Muscicapara boliviana* d'Orb., of later date) was also from Yungas, and an alleged type of it (now before me) is still in the Lafresnaye Collection (No. 4686). It is certainly the same as the bird commonly recognized as *E. obscura.*

This is, except *E. gigas*, the largest species of the genus, the wing averaging, in Bolivian and certain South Brazilian specimens, (without definite locality) 88.9 mm. (3.50 in.). While similar in coloration to *E. frantzii*, it is easily distinguishable from it by its much larger size. The concealed white spot so commonly present in the allied forms, appears to be always wanting in this, although Pelzeln has referred to *E. obscura* a specimen with white at the base of the crest feathers.

Count von Berlepsch has separated the Brazilian form of this species (l. c.) from *E. obscura* of Bolivia and Peru on the ground of considerable difference in size and color. This does not appear to be borne out by the limited material at hand, which, however, includes three of Berlepsch's Taquara specimens on which his subspecies *rustica* was based. It is further to be noted that his examples were November specimens, which would differ in color from April specimens just as his two races are supposed to differ. Three of my South Brazilian specimens (one from Ihla do Marinheira, the others without definite locality) agree in size with the type of *M. olivacea* d'Orb & Lafr. from Yungas, and are considerably larger than the Taquara specimens.

One of my specimens (No. 23,951, U. S. Nat. Mus., "South America, Cruise of the Delaware, Dr. G. R. Horner") is noteworthy as being nearly uniform dull gray below (slightly buffy white on the belly), with, however, a few olive-green feathers (still mostly inclosed in the sheaths of the growing feather) here and there interspersed. It is probably a young bird taken at the beginning of the second moult.

Elainea affinis.

Elainea affinis BURM., Thiere Bras., II, 1856, p. 477; SCL., Cat. Bds. Brit. Mus., XIV, 1888, p. 154.

This species has no close relationship with any other species of the genus, being well characterized by its peculiar coloration. It is apparently a rare species in collections, and has thus far apparently escaped synonyms, though presenting the usual wide range of variation in size and color of other members of its genus, particularly in respect to the size and form of the bill, as already shown (antea, p. —, figs. 9–12, 9*a*–12*a*). Figures 9 and 12 are drawn from birds which differ very little in size or coloration, but the variation in the size and form of the bill is much greater than frequently occurs in species belonging to entirely distinct genera.

I am in doubt as to the status and relationships of the following species, further than that most of them doubtless fall into the "restricted" genus *Elainea*, and thus require mention in the present connection.

Elainea cinerea PELZ., Orn. Braz., ii, 1869, p. 180.—Based on one specimen from Marabitanas, Brazil. "Alae 2″ 5‴, caudae 2″ 3‴." Doubtless = *Serpophaga albogrisea* SCL. & SALV.

Elainea leucospodia TACZ., P. Z. S., 1877, p. 325; Orn. Pér., II, 1884, p. 267.—Western Peru. Similar to *E. albiceps*, but smaller and paler. Wing 62 mm., tail 51 mm.

Elainea taczanowskii BERL., Ibis, 1883, p. 137.—Bahia; two specimens. Wing 61.5 mm., tail 54.5 mm. Probably a *Myiopagis*.

Elainea hypospodia SCL., P. Z. S., 1887, p. 49.—Venezuela, one specimen. Wing 2.90, tail 2.50 Allied to *E. pagana*, but with "no trace of olive or yellow in the plumage."

Elainea olivina Salv. & Godm., Ibis, 1884, p. 446 ; Scl., Cat. Bds. Brit. Mus., XIV, 1888, p. 146, pl. xii.—Similar to *E. frantzii*, but rather smaller, and deeper colored, both above and below.

Elainea pallatangæ Scl., P. Z. S., 1861, p. 407, pl. xli.—Ecuador. "Closely allied to *E. olivina*."

Elainea arenarum Salv., P. Z. S., 1883, p. 190 ; Scl., Cat. Bds. Brit. Mus., XIV, 1888, p. 153, pl. xxxvi, fig. 3.—*Cf. Sublegatus arenarum* Salv. & Godm., Biol. Centr. Am., II, 1888, p. 37. One specimen, Punta Arenas, Costa Rica.

Respecting this, one may well be excused from venturing an opinion unless able to examine the type. While Mr. Sclater retains the species in *Elainea*, Mr. Salvin, the original describer, refers it to *Sublegatus*, and considers it not specifically different from *Sublegatus glaber* Scl. & Salv. *S. glaber* is figured in P. Z. S., 1868, pl. xiii, fig. 2, and *E. arenarum* in the "Biologia," pl. xxxvi, fig. 3. A comparison of the two plates, purporting to represent the same species, is enough to warn away the timid from any interference in such a complicated case. It is to be hoped, however, that some explanation will be given of how the same species can differ so greatly as these figures represent, in respect both to the form of the bill and coloration, particularly in the color of the loral region and the lower surface generally.

ARTICLE XIX.—*On the Maximilian Types of South American Birds in the American Museum of Natural History.* By J. A. ALLEN.

The zoölogical collections of the late Maximilian, Prince of Wied, were purchased in Paris for the American Museum of Natural History in 1870, by Mr. D. G. Elliot and Mr. William T. Blodgett, acting as agents in the matter for the Trustees of the American Museum. During the following year the collections were safely transferred to New York, and deposited in the building known as the Arsenal, in Central Park. In 1877 they were removed to the present Museum building in Manhattan Square. The Maximilian Collection consisted of "about 4,000 mounted birds, 600 mounted mammals, and about 2,000 fishes and reptiles mounted and in alcohol."[*] The birds were gathered from all parts of the world, by far the greater portion, however, being from North and South America. We have to do in the present connection with only the South American birds, and more especially with the types of the species described as new by the Prince in his "Reise nach Brasilien"[†] and his "Beiträge zur Naturgeschichte von Brasilien."[‡] In these works about 160 species were described and named as new, of which about three-fourths are still represented in the Maximilian Collection by the original or "type" specimens. Whether the others were lost prior to the transference of the collection to New York, or since that time, it is impossible to determine; yet it seems evident that in a few instances the types were either not preserved or were lost before the reception of the collection in this country.

In 1865, about two years before his death, Prince Maximilian prepared a manuscript Catalogue of his Ornithological Collection,[§] which is now the property of the Museum, and is the "MS. Catalogue" so often cited in the following pages. This is of great importance as indicating his latest views respecting the status and nomenclature of his own species. It is unfortunate, however, that his specimens were not numbered, so as to clearly identify each with the entry in the Catalogue, and that the localities where they were obtained were not explicitly stated. In general the localities given, on his labels as well as in the Catalogue, indicate merely the habitat of the species. In cases where he collected the specimens himself the fact is generally indicated, both on the labels and in the Catalogue. The Catalogue proves, however, to be not a complete record of his collection, as the collection contains species bearing his labels, and unquestionably belonging to his collection, which are not entered in the Catalogue, while on the other hand a few species are twice entered under different generic names, and widely separated in his system of classification. Many species are entered in the Catalogue which are not now in the collection, and have not been for some years at least.

---

[*] First Ann. Rep. of the Am. Mus. Nat. Hist., 1870, p. 22.

[†] Reise nach Brasilien in den Jahren 1815 bis 1817. 2 vols. Gr. 4to. Frankfurt a M., 1820–21.

[‡] 4 vols. 8vo, Weimar, 1825–33. (Aves, vols. III and IV, 1830–33.)

[§] Catalog | der ornithologischen | Sammlung, 1865. Mai. Folio, pp. 1-346+1+20, with many interpolated leaves.

The birds in the Maximilian Collection when received at the Museum were mostly mounted on lead-colored T-shaped perches, with a square base, except in the case of the Shore-birds, Water-birds, and some Ground-birds, such as the Grouse, Larks, and some of the Sparrows, which were mounted on plain flat stands. The labels (usually narrow strips of thin card-board) were tacked on the sides of the stands (in the case of the T-shaped perches, on the sides of the base), there being often two labels to each specimen, affixed to opposite edges of the stand, the labels being generally exact duplicates of each other. In many cases among the perching birds the specimens were mounted in pairs (male and female) on the same perch, in which case the same label carried two sex-marks (♂ and ♀, or "Mas." and "Fem."). As these stands were of rude construction, more or less discolored and unsightly, turned mahogany perches were eventually substituted for them, the labels being carefully removed from the old stands and tacked on the bottoms of the new stands. In a few instances transpositions of labels occurred, but they were generally of such a character as to be easily rectified. Where birds were originally mounted in pairs one of the specimens would thus be left without a label, but in general a pencil entry of the name of the species and the sex, with "Max. Coll.," would be made on the bottom of the perch of any specimen thus left without an original label. In this way the determination of what are Maximilian birds is not difficult. Yet in not a few instances the original Wied labels have been wholly lost. As, however, all of the other mounted South American birds are from the Verreaux and Verdey Collections (except a few presented by Mr. Elliot), and bear an entirely different and much more elaborate label, it is rarely a matter of much difficulty to identify, by aid of the MS. Catalogue, any of the unlabeled Maximilian specimens (the Elliot specimens having a tag tied to the leg).

Although Maximilian's South American birds were collected seventy to seventy-five years ago, they are still, with very few exceptions, in a very good state of preservation. Long exposure to light has more or less faded the colors, but there has been very little injury from museum pests. The types have now been dismounted and transferred to cabinets, thus preserving them from further deterioration.

Maximilian, for the time in which he lived and worked, was an excellent ornithologist, combining ample field experience with a good technical knowledge of his subject. He not only took careful measurements, and notes of the color of the eyes, bill and feet, etc., from the freshly-killed bird, but his published descriptions, in respect to minuteness of detail and the careful discrimination of nice points, are not excelled, and rarely equaled, in our best modern works. In the matter of priority in respect to his new species, however, he was exceedingly unfortunate. At the time he gathered his material very few of the birds he, five to fifteen years later, described as new had been named. In the meantime Vieillot, mainly in the "Nouveau Dictionnaire d'Histoire Naturelle" (1816–19), gave names to a large number of birds described under vernacular names by Azara in his "Apuntiementos" (1802), which prove to be identical with many of those described later by the Prince from specimens he personally obtained during his Brazilian journey (1815–17). Lichtenstein also, in 1823, in an obscure museum catalogue of duplicates,[*] described many species identical with those Maximilian had collected and afterwards described as new. He was also anticipated in not a few instances by Spix,[†] who published in 1824–25. Consequently of the species described as new by Maximilian, rather more than one-half had been previously named or described by the above-mentioned authors during the interval between his journey in Brazil and the publication of his "Beiträge," his final report on his natural history work in Brazil.

---

[*] Verzeichniss der Doubletten des Zoolog. Museum der königl. Universität zu Berlin, nebst Beschreibungen vieler bisher unbekannten Arten von Säugthieren, Vogeln, Amphibien, und Fischen. 4to. Berlin, 1823.

[†] Avium species novæ, quas in itinere per Brasiliam annis 1817–20 collegit et descripsit. 2 vols., folio, 1824–25.

Many of Maximilian's species were first made known by Temminck, to whom the Prince transmitted, apparently under manuscript names, many of his unpublished species to be figured in the "Planche coloriées," and where the systematic names of the species are given with "Pr. Max." as the authority. It thus happens that quite a number of the specimens figured in the "Planche coloriées" are now in our Museum collection.

Although Maximilian's descriptions of his species were so excellent, the classifications of that early day were too crude to always insure the correct allocation of the species in the system, as now understood. In the case of dull-plumaged birds, much resembling in a general way others belonging to widely different groups, doubt has always existed in respect to some of the Maximilian species, resulting in their being either practically ignored by later writers, or wrongly identified. On such questions it is hoped the present paper will throw some welcome light.

In the following paper the species are arranged in the order adopted in the "Nomenclator Avium Neotropicalium" of Sclater and Salvin. Maximilian's species are cited under their equivalent current names. At the end of the paper a concordance is given, with the Maximilian species arranged in the order of their appearance in the "Beiträge," with a list of types of each, when still extant.

Turdus fumigatus *Licht.*

Turdus ferrugineus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 649.

Am. Mus. Nat. Hist., No. 4182, ♂ ad., and No. 4183, ♀ ad. Southeastern Brazil (Espirito Santo?).

The original label of No. 4182 reads as follows: "*Turdus ferrugineus* mihi. ♂. Brasilia, M. R." It probably covered both specimens, as one end has been trimmed off, doubtless to remove the other sex mark when the birds were separated. The entry in the MS. Catalogue is, "*Turdus ferrugineus* Wied. Brasilien, Mas. Fem. M. R."

Polioptila leucogastra *(Wied).*

Sylvia leucogastra WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 710.

Am. Mus. Nat. Hist., No. 4222, ♂ ad.; No. 4221, ♀ ad.; No. 4223, ♂ juv. "Sertong der Provinz Bahia."

The original label of Nos. 4222 and 4221 reads as follows: "*Sylvia leucogastra.* Figuier à tête de Cayenne Buff. Vieill. ♂ Brasilia. ♀." No. 4223 is labeled "*Setophaga* [sic] *leucogastra.* Mas. Brasilia, M. R." The entry in the MS. Catalogue is "*Culicivora leucogastra* W. Brasilia."

NOTE.—**Turdus brasiliensis** WIED, Reise Bras., II, 1821, pp. 93, 148 (*Mimus brasiliensis* Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 662)=*Donacobius brasiliensis* (Linn.).

Although Wied makes no reference in either his "Reise" or "Beiträge" to Linnæus or Gmelin, it is evident that he adopted the name *brasiliensis* from Linnæus, as shown by the following transcrips, the original label of his specimens (Nos. 4227 and 4228, A. M. N. H.) being as follows: "*Donacobius atricapillus* Gray, Swains. (*Turdus atricapillus* Gm. *T. brasiliensis* Gm. *vociferus* Sw.; *Donac. albolineatus* Bp.) ♀ ♂ Brasilia, M. R." The entry in the MS. Catalogue is: "*Donacobius atricapillus* Linn. (*Mimus brasiliensis* Wied; *Turdus brasiliensis* Gmel.). Brasilia, M. R. Mas. Fem."

Campylorhynchus variegatus (*Gm.*).

Opetiorhynchus turdinus WIED, Reise Bras., II, 1821, p. 148; Beitr. Naturg. Bras., III, ii, 1831, p. 673.

Am. Mus. Nat. Hist., No. 4233, ♀ ad.; No. 4234, ♀ ad. Southern Brazil.

No. 4234. still carries the original label, inscribed as follows: "*Opetiorhynchus turdinus* mihi. ♂ *Campylorhynchus scolop.* Spix. [♀], Brasilia, M. R." This label probably covered both specimens, as one end, where "♀" may have stood, has been cut off.

The entry in the MS. Catalogue is: "*Campylorhynchus turdinus* Wied (*scolopaceus* Spix.; *Turdus variegatus* Gmel.; *T. scolopaceus* Lichstenst.). Brasilien."

NOTE.—Wied's "**Thryothorus coraya**, Vieill." (Beitr., III, ii 1831, p. 754)=*T. genibarbis* Sw., as shown by his original specimens (A. M. N. H., Nos. 4248, 4249).

His **Thryothorus striolatus** (ex Spix) is *Thryophilus longirostris* (Vieill.), as shown by one of his specimens (A. M. N. H., No. 4246, juv.) still in the collection.

Troglodytes musculus *Naum.*

Thryothorus platensis WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 742.

Troglodytes furvus auct., nec GM.

Am. Mus. Nat. Hist., Nos. 4253 and 4254. Southeastern Brazil (Rio de Janeiro? Villa de Belmonte?).

The two original Wied labels of these specimens read as follows: No. 4254, "*Thryothorus platensis. Sylvia platensis.* Mas. Brasilia, M. R."; No. 4253, the same, omitting "Mas." The following is the entry in the MS. Catalogue: "*Thryothorus platensis* Wied. (*Sylvia platensis* Lath.; *Troglodytes* Less.) Süd Americas, Brasilien."

In the "Beiträge" Wied mentions the close resemblance of this bird to *Troglodytes furvus* Licht., but says he believes it to be different. On his labels and in his MS. Catalogue he erroneously identifies it with *Sylvia platensis* Lath. (=*Cistothorus platensis* auct. recent.), and cites in the "Beiträge" "*Sylvia platensis* Auctor."

Anthus, sp. incog.

Anthus poecilopterus WIED, Beitr. Naturg. Bras., III, i, 1830, p. 633.

Not in the Am. Mus. Nat. Hist.; not entered in the Wied MS. Catalogue.

This, judging from Wied's description, is evidently an *Anthus*, but under this genus he has only *A. chii* in his MS. Catalogue, and under it no synonyms are entered.

Basileuterus stragulatus (*Licht.*).

Muscicapa rivularis Wied, Reise nach Bras., II, 1821, p. 103; Beitr. Naturg. Bras., III, ii, 1831, p. 789.

Am. Mus. Nat. Hist., No. 4292, ♀ ad.; Nos. 4293, 4294, ♂ ♂ ad. Rio Belmonte.

Nos. 4294 and 4292 have the following original label: "*Basileuteres stragulatus* Licht. *Musc. stragulata* Licht. *Musc. rivularis* Wied; *Geothlypis* Cab. ♂ Brasilien, M. R. Fem." The original label of No. 4293 is "*Basileut. stragulatus, Muscic. rivularis* Wied. Brasilia. Mas. M. R." The entry in the MS. Catalogue is: "*Basileutheres stragulatus* Licht. (*Muscicapa stragulata* Licht.; *Musc. rivularis* Wied). Mas. Fem. Brasilien (M. R.)."

Note.—**Muscicapa agilis** Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 795 = *Vireo agilis* (Licht.) = *V. chivi* (Vieill.). The two specimens in the Wied Collection (Nos. 4299, 4309) are labeled and also entered in the MS. Catalogue as "*Phyllomanes chivi* Vieill. (*Muscicapa agilis* Wied.) Brasilien."

Sylvia poicilotis Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 715. —Wied's types of his *Sylvia poicilotis*, still in the collection (A. M. N. H., Nos. 4301 and 6762, ♂ ♂), show that the species has been synonymized correctly with *Hylophilus poicilotis* Temm., with which Wied himself (l. c., p. 717) doubtfully identified it. The original label is as follows: "*Sylvia poicilotis* mihi. *Hyloph.* Temm. Brasilia, M. R. ♂."

The only other specimens of *Hylophilus* now extant in the Maximilian Collection are two examples of *H. thoracicus* Temm. (A. M. N. H., No. 4298, ♂, and No. 4297, ♀).

Hylophilus flaveolus (*Wied*).

Sylvia flaveola Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 719.
Hylophilus flaveolus Burm., Syst. Ueb. der Thiere Bras., III, ii, 1856, p. 110; Scl., Ibis, 1881, p. 310.

Not in Am. Mus. Nat. Hist.; not included in Wied's MS. Catalogue.

? Progne tapera (*Linn.*).

? Hirundo pascuum Wied, Beitr. Naturg. Bras., III, i, 1830, p. 360.

Not in Am. Mus. Nat. Hist. Lost prior to 1831 (*cf.* Wied, l. c., p. 361).

This is evidently a *Progne*, and is usually cited as a synonym of *P. tapera* (Linn.), which it probably is.

Wied says (l. c.), p. 361 : " Diese Schwalbe hat sehr viel Aehnlichkeit mit dem jungen Vogel der vorhergehenden Art, *Hirundo chalybea*, allein sie scheint mir eine von derselben verschiedene Species zu bilden, indem ihr Schwanz weniger ausgeschnitten ist. Da ich nur ein Examplar der *Hirundo pascuum* erheilt, und dasselbe jetzt nicht mehr besitze," etc. It is consequently not to be expected in his collection.

Atticora melanoleuca (*Wied*).

Hirundo melanoleuca Wied, Reise Bras., I, 1820, p. 345 ; *ib.*, Engl. ed., I, 1820, p. 303 ; Beitr. Naturg. Bras., III, 1830, p. 371.

"*Hirundo melanoleuca* P. Max." Temm., Pl. Col., 35^e livr., pl. 209, fig. 2.

Am. Mus. Nat. Hist., No. 6758, ♂ ad. Rio Grande de Belmonte.

This species was described from a single male bird, which is the basis of Temminck's Pl. 209, Fig. 2, as stated by both Temminck and Wied. The original label is inscribed "*Hirundo melanoleuca* mihi. Hirondelle hausse-col, Temm. Brasilia, M. R. Rio Grande de Belmonte."

This species is not entered in the MS. Catalogue.

Mr. R. B. Sharpe (Cat. Bds. Brit. Mus., X, p. 185, footnote) seems to have overlooked the fact that this species was first published in the " Reise," in 1820, and hence three years before the alleged date of Temminck's Pl. 209, and also the statement by both Wied and Temminck that the latter received from the former the birds from which this plate was drawn.

Atticora cyanoleuca (*Vieill.*).

Hirundo minuta Wied, Reise Bras., II, 1821, p. 336 ; Beitr. Naturg. Bras., III, i, 1830, p. 369.

" *Hirundo minuta* P. Max." Temm., Pl. Col., 35^e livr., Pl. 209, Fig. 1.

Am. Mus. Nat. Hist., No. 6759, ♂ ad.; No. 6760, ♀ ad. Rio de Janeiro.

The original label for this pair of birds reads as follows: "*Hirundo minuta* mihi. Mas. Fem. Hirondelle satinée Tem. Brasilia, M. R." The entry in the MS. Catalogue is: "*Hirundo minuta* Wied. Mas. Fem. Brasilia."

According to Wied (Beitr., l. c., p. 371), these birds are the basis of Temmnick's Pl. 209, Fig. 1.

Stelgidopteryx ruficollis (*Vieill.*).

Hirundo jugularis Wied, Reise Bras., I, 1820, p. 345; *ib.*, Engl. ed., I, 1820, p. 303; Beitr. Naturg. Bras., III, i, 1830, p. 365.

Am. Mus. Nat. Hist., No. 6761, ♂ ad. Brazil.

The single type specimen in the collection bears the original label, as follows: "*Hirundo iugularis* mihi. Mas. Brasilia, M. R." The entry in the MS. Catalogue is simply "*Hirundo jugularis* Wied. Brasilia."

Note.—In Wied's MS. Catalogue, p. 203, I find what appears to be a MS. name, as follows: "*Hirundo torquata* Wied. Brasilia." Opposite this entry is written in pencil, in what Mr. D. G. Elliot identifies as the handwriting of J. Verreaux, "*fulvus* Vieill.," indicating that there was probably a specimen bearing this name in the collection when it was in Verreaux's hands. I am unable to trace the specimen now.

Dacnis speciosa (*Wied*).

Sylvia speciosa Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 708.

"*Sylvia speciosa* P. Max." Temm., Pl. Col., 49^e livr., pl. 293, fig. 2.

Am. Mus. Nat. Hist., No. 4352, ♂ ad. Rio de Janeiro.

The specimen bears the following original label: "*Sylvicola speciosa* Wied. Mas. Brasilia." I cannot find any entry of this species in the MS. Catalogue; it is certainly not mentioned under either *Dacnis* or *Sylvicola*.

This is apparently the specimen figured by Temminck (l. c.). *Cf.* Wied, op. cit., p. 710.

Dacnis plumbea (*Lath.*).

Sylvia caerulescens Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 713.

Am. Mus. Nat. Hist., No. 4353, ♂ ad. Rio Mucurì.

The original label bears the following: "*Sylvia coerulescens* mihi. Bec-en poinçon blue et blanc d'Az. Brasilia, M. R." It is not entered in the MS. Catalogue.

Procnias ventralis *Ill.*

Procnias cyanotropus Wied, Reise Bras., I, 1820, p. 187; *ib.*, Engl. ed., I, 1820, p. 160.

"*Procnias ventralis*, Ill." Wied, Beitr. Naturg. Bras., III, i, 1830, p. 385.

Am. Mus. Nat. Hist., 4369, ♂ ad., 4368, ♂ juv. Southeastern Brazil.

The original label of these two birds reads: "*Procnias ventralis* Illig. *Ampelis tersa* Linn. Brasilia. Mas. juv. Mas. M. R." The MS. Catalogue entry is "*Tersina ventralis* Ill. (*Procnias ventr.* Ill.). Mas. Fem. Brasilia."

Note. — "**Euphone musica** *Licht.*" Wied, Beitr. Naturg. Bras., III, i, 1830, p. 443, is shown by his specimens to be *E. nigricollis* Vieill., to which species it is currently referred.

"**Euphone rufiventris** *Licht.*" Wied, Beitr. Naturg. Bras., III, i, 1830, p. 447, is *Euphonia pectoralis* (Lath.), as commonly referred.

"**Euphone violacea** *Licht.*" Wied, Reise Bras., I, 1820, p. 39, and Beitr., III, i, 1830, p. 439, is *Euphonia violacea lichtensteinii* (Cab.).

Tanagrella cyanomelas (*Wied*).

Tanagra cyanomelas Weid, Beitr. Naturg. Bras., III, 1830, p. 453.

Not in American Museum of Natural History.

This species was described from a male bird taken on the Rio Ilhéos. The entry in the MS. Catalogue is "*Tanagrella? cyanomelas* Wied. Brasilia, M. R."

The type specimen is not now in the collection, and I doubt whether it was ever received at the Museum.

Calliste festiva (*Shaw*).

"*Tanagra rubricollis* Temm." Wied, Beitr. Naturg. Bras., III, 1830, p. 456.

Am. Mus. Nat. Hist., No. 4427, ♂ ad. Cabo Frio, Southern Brazil.

The entry in the MS. Catalogue is "*Calliste festiva* Shaw. (Le tricolor Buff.; Tangara tricolor Van Gmel.; *Tanagra festiva* Shaw; *T. cyanocephala* Vieill.; *Tan. trichroa* Licht.; *Aglaia cyanocephala* Swains.; *Callispiza festiva* Caban.; *T. rubricollis* Temm.). Südliches Brasilien (M. R.)."

The original label, still attached to the specimen, reads: "*Calliste festiva* Shaw. *C. rubricollis* Temm. ♂. Brasilia, M. R."

Temminck's name *rubricollis* was apparently a MS. name adopted by Wied.

Calliste cyanoventris (*Vieill.*).

Tanagra elegans Wied, Reise Bras., I, 1820, p. 187; *ib.*, Engl. ed., I, 1820, p. 160.

"*Tanagra citrinella* Temm." Wied, Beitr. Naturg. Bras., III, i, 1830, p. 464.

Tanagra citrinella Temm., Pl. Col., 7e livr, 1823, pl. 42, fig. 2.

Am. Mus. Nat. Hist. No., 4422, ♂ ad. Rio Jacú.

This species is entered in the MS. Catalogue as follows: "*Calliste cyanoventris* Vieill. (*Calliste cyaneiventris* Sclat.; *T. elegans* Wied; *T. citrinella* Temm.; *Aglaia citrinella* Sw.; *Calliste citrinella* Gray; *Callispiza citrinella* Caban.) Brasilien (M. R.)." The original label is lost, but the specimen above indicated seems to be unquestionably the original of Wied's description, of which he says (Beitr., l. c.) he had only the male.

Tanagra palmarum *Wied.*

Tanagra palmarum Wied, Reise Bras., II, 1820, p. 76; Beitr. Naturg. Bras., III, i, 1830, p. 469.

Am. Mus. Nat. Hist., No. 6765, ♂ ad. Southeastern Brazil.

Entered in the MS. Catalogue as follows: "*Tanagra palmarum* Wied, Sclat. (*Tanagra praelatus* Less.; *T. oleaginea* [sic] Licht.). Mas. Fem. Brasilia (M. R.)."

Only the male can now be found, which bears the original label, as follows: "*T. palmarum* mihi. *olivacens* Licht. ♂. Brasilia, M. R."

Phœnicothraupis rubica (*Vieill.*).

Tanagra flammiceps Wied, Beitr. Naturg. Bras., III, i, 1830, p. 407.
"*Tanagra flammiceps* P. Max." Temm., Pl. Col., 30° livr., pl. 177.

? Am. Mus. Nat. Hist., No. 4594, ♂.

A specimen of *P. rubica* in the collection, without a label (No. 4504), is almost unquestionably one of Wied's original specimens.

The following is the entry in the MS. Catalogue: "*Phoenicothraupis rubica* Vieill. (*Tanagra porphyrio* Licht.; *Saltator rubicus* Vieill.; *Tanagra flammiceps* Tem. Wied; *Phoenicothraupis rubica* Caban., Sclat.; *Tachyphonus rubicus* Burm.) Mas. Fem. Brasilia (M. R.)."

Trichothraupis quadricolor (*Vieill.*).

Tanagra auricapilla Wied, Reise Bras., II, 1821, p. 212; Beitr. Naturg. Bras., III, i, 1830, p. 538.

? Am. Mus. Nat. Hist., No. 6864, ♂ ad. Province of Bahia.

There is a specimen of this species in the collection labeled "Brazil, Max. Coll.," from which the original label has been lost. This is probably the type of the male. The species is not included in the MS. Catalogue.

Nemosia pileata (*Bodd.*).

Hylophilus caeruleus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 731.
Hylophilus cyanoleucus Wied, *ib.*, p. 734.

Not in American Museum of Natural History.

These species are currently recognized as respectively the female and male of *Nemosia pileata* (Bodd.). They are not represented in the Maximilian Collection. In the MS. Catalogue of the collection they are both entered at p. 95, under *Hylophilus*, as "2. *caeruleus* Wied, Brasilia (M. R.)," and "6. *cyanoleucus* Wied. Brasilien (M. R.)." They are again, at p. 155, both entered with a ? under *Nemosia pileata*, as follows: "*Nemosia pileata* Bodd. (*Tanagra pileata* Vieill.; ? *Hylophilus caeruleatus* [sic] Wied; *Hyl. cyanoleucus* Wied?) Brasilien (M. R.)." He thus seems to have finally considered them as probably *N. pileata*.

Nemosia ruficapilla *Vieill.*

Hylophilus ruficeps Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 725.

Am. Mus. Nat. Hist., No. 4525, ♂ ad. Province of Bahia.

The only specimen of this species in the mounted collection lacks the original label, but there is no reasonable doubt of its being one of Wied's specimens. The species is thus entered in Wied's MS. Catalogue: "*Nemosia ruficapilla* Vieill. (*Nem. ruficapilla* Vieill., Sclat.; *Sylvia ruficapilla* Vieill.; *Hylophilus ruficapillus* [sic] Wied; *Hemithraupis ruficapilla* Caban.) Brasilia (M. R.)." The *H.* "*ruficapillus* Wied" is evidently a slip for *ruficeps* Wied, as he has no *H. ruficapillus* in his "Beiträge."

Saltator similis *Lafr. et d'Orb.*

Tanagra superciliaris Wied, Beitr. Naturg., III, i, 1830, p. 518.

Am. Mus. Nat. Hist., No. 6863, ♂; No. 6768, ♀ ad., in much worn plumage. Campo Geral, interior of the Province of Brazil.

The original label is inscribed as follows: "*T.* (*Saltator*) *superciliaris* mihi, ♂ Brasilia, M. R." The entry in the MS. Catalogue is "*Saltator similis* Lafren. (*Tanagra superciliaris* Wied). Corrientes, Brasilien (M. R.)."

The original description appears to have been based on a female and a young male. Of the former he says (Beitr., p. 520): "Auch das oben beschriebene Weibchen schien noch nicht sein vollkommenes Gefieder zu tragen," which seems to apply well to the bird given above as No. 6768.

Were it not that the name *superciliaris* had been previously given to another species of *Saltator* by Spix, Wied's name would hold for the present species, it having seven years' priority over *similis* of Lafr. & d'Orb.

NOTE.—**Fringilla iugularis** WIED, Beitr. Naturg. Bras., III, i, 1830, p. 558.=*Tanagra jugularis* LICHT., 1823.=*Sallator atricollis* VIEILL., 1817.

Am. Mus. Nat. Hist., Nos. 6767, ♂ ad., 6766, ♀ ad. Province of Bahia.

The original labels read as follows: No. 6767, "*Saltator atricollis* Spix. *Fring. jugularis* mihi, ♂, Brasilia." No. 6766, "*Saltator iugularis* mihi. Fem. Brasilia." Not entered in the MS. Catalogue.

Schistochlamys capistratus (*Wied*).

Tanagra capistrata WIED, Reise Bras., II, 1821, p. 179; Beitr. Naturg. Bras., III, i, 1830, p. 500.

Am. Mus. Nat. Hist., No. 6861, ♂ ad. Campos Geraës.

The original label is: "*Orchestichus capistratus* Wied. Mas. Brasilia. M. R. *T. leucophaea* Licht." The entry in the MS. Catalogue is: "*Schistochlamis leucophaea* Licht. Caban. (*Tanagra capistrata* Spix, Wied, *Tanagra leucophaea* Licht.) Mas. Fem. Brasilien (M. R.)."

NOTE.—"**Fringilla Brissonii** LATH." WIED, Beitr. Naturg. Bras., I, i, 1830, 561 (=? *Guiraca cyanea* (LINN.), is not in the collection, nor is it entered in the MS. Catalogue.

Oryzoborus maximiliani *Cab.*

Fringilla crassirostris WIED, Beitr. Naturg. Bras., III, i, 1830, p. 564.

Not in Am. Mus. Nat. Hist., nor is it entered in Wied's MS. Catalogue.

Sporophila nigroaurantia (*Bodd.*).

Fringilla pyrrhomelas WIED, Beitr. Naturg. Bras., III, i, 1830, p. 586.

Am. Mus. Nat. Hist., No. 6769, ♂ ad.; No. 4601, ♂ juv.; No. 4602, ♂ juv.; No. 6770, ♀ ad. Rio de Janeiro.

The original labels read as follows: No. 6769, *Spermophila pyrrhomelas* Wied. Mas. Brasilia." Nos. 4601 and 4602 are labeled the same as the last; No. 6770 is also labeled the same, with the substitution of "Fem." for "Mas."

The entry in the MS. Catalogue is as follows: "*Spermophila aurantia* Gmel. (Bouvriel de l'isle de Bourbon, Buff.; *Loxia aurantia* Gmel.; *Pyrrhula pyrrhomelas* Vieill.; *Loxia brevirostris* Spix; *Fring. pyrrhomelas* Wied; *Pyrrhula capistrata* Vig.; *Loxia fraterculus* Less.; *Sporophila rubiginosa* Swain.; *Spermoph. pyrrhomelas* Gray.) Mas. Fem. Brasilia (M. R.)."

Sporophila cærulescens (*Vieill.*).

Fringilla leucopogon Wied, Beitr. Naturg. Bras., III, i, 1830, p. 572.

Not in Am. Mus. Nat. Hist.—Entered in Wied's MS. Catalogue as follows: "*Spermophila ornata* Licht., Caban. (Grosbec à collier Azara; *Fring. ornata* Licht.; *Fring. leucopogon* Wied; *Spermophila ornata* Hartl.; *Sperm. leucopogon* et *ornata* Gray.) Mas. Fem. Brasilia (M. R.)."

Sporophila gutturalis (*Licht.*).

Fringilla melanocephala Wied, Beitr. Naturg. Bras., III, i, 1830, p. 577.

Not in Am. Mus. Nat. Hist.—Entered in Wied's MS. Catalogue as follows: "*Spermophila gutturalis* Licht. (*Fringilla gutturalis* Licht.; *Loxia plebia* Spix; *Fringilla melanocephala* Wied; *Sperm. gutturalis* Gray; *Sporophila gutturalis* Caban.) Brasilia (M. R.)."

Sporophila plumbea (*Wied*).

Fringilla plumbea Wied, Beitr. Naturg. Bras., III, i, 1830, p. 579.

Not in Am. Mus. Nat. Hist., and not included in Wied's MS. Catalogue.

Sporophila hypoleucus (*Licht.*).

Fringilla rufirostris Wied Beitr. Naturg. Bras., III, i, 1830, p. 581.

Not in Am. Mus. Nat. Hist.—Entered in Wied's MS. Catalogue as follows: "*Spermophila hypoleuca* Ill. Gray. (Grosbec à bec olivatre, Azara; *Fring. hypoleuca* Ill. Licht.; *Pyrrul.* [sic] *cinereola* Temm.; *Pyrrh. rubrirostris* Vieill. [sic]; *Fring. rufirostris*

Wied; *Spermoph. cinereola* Swains.; *Spermoph. hypoleuca* Gray, Caban.) Brasilia (M. R.)."

In all probability these specimens were not received with Wied's collection.

Sporophila, sp. incog.

Fringilla minuta Wied, Beitr. Naturg. Bras., III, i, 1830, p. 591.

Not in Am. Mus. Nat. Hist.; not entered in MS. Catalogue.

Of this species Mr. Sharpe in his Catalogue of the Fringillidæ (Cat. Bds. Brit. Mus., XII) makes no mention; Cabanis (Mus. Hein., ii, p. 149, footnote) refers it to *Sporophila plumbea* (Wied); Giebel (Thesaur., II, 204) identifies it doubtfully with *S. gutturalis;* Wied himself (l. c., p. 593) compares it with his *Fringilla pyrrhomelas.* As it was based on a female, it is not possible to satisfactorily allocate the species.

Sporophila cucullata (*Bodd.*).

Fringilla atricapilla Wied, Beitr. Naturg. Bras., III, i, 1830, p. 569.

Not in Am. Mus. Nat. Hist., and not included in Wied's Catalogue.

Note.—**Fringilla falcirostris** Wied, Beitr. Naturg. Bras., III, i, 1830, p. 584 (=? *Pyrrhula falcirostris* Temm.).

Not in Am. Mus. Nat. Hist., and not included in Wied's MS. Catalogue of his collection.

Wied's cites "*Pyrrhula falcirostris,* Temm., Pl. col. 11, Fig. 2, das Männchen;" and adds in his text (l. c., p. 586): "Dieser Vogel ist mir nur einmal vorgekommen, und zwar im weiblichen Geschlecht, ich vermuthe aber unbezweifelt, dass er das Weibchen der von Herrn *Temmink* abgebildeten *Pyrrhula falcirostris* ist." The single female on which his description was based was from the Province of Bahia. (*Cf.* Sharpe, Cat. Bds. Brit. Mus., XII, p. 139.)

Phonipara fuliginosa (*Wied*).

Fringilla fuliginosa Wied, Beitr. Naturg. Bras., III, i, 1830, p. 628.

Not in Am. Mus. Nat. Hist.; not included in Wied's MS. Catalogue.

Wied says (Beitr., p. 630) he had only one example of this bird, which was a stuffed specimen when he received it. He adds: "Das einzige mir bekannte Exemplar befindet sich in meiner ornithologischen Sammlung," but it doubtless had disappeared prior to 1865.

Porphyrospiza cærulescens (*Wied*).

Tanagra caerulescens Wied, Beitr. Naturg. Bras., III, i, 1830, p. 541.
Porphyrospiza cærulescens Allen, Bull. Am. Mus. Nat. Hist., II, p. 140 (June, 1889).
Cyanospiza sive *Porphyrospiza cyanella* auct.

Am. Mus. Nat. Hist., No. 6764, ♂ ad., in worn plumage. Campos Geraës.

The original label reads as follows: "*T. coerulescens* mihi, ♂, Brasilia. M. R." The species does not appear to be entered in the MS. Catalogue.

As I have already stated (antea, p. 140), this is the species usually heretofore identified with the *Emberiza cyanella* Sparrman (=*Porphyrospiza pulchra* Sharpe).

Tiaris ornata (*Wied*).

Fringilla ornata Wied, Reise Bras., II, 1821, p. 191; Beitr. Naturg. Bras., III, i, 1830, p. 610.

Am. Mus. Nat. Hist., No. 4622, ♂ ad.; No. 4623, ♀ ad. Barra da Vareda, interior of the Province of Brazil.

Wied's original pair of these birds is fortunately still in a good state of preservation. The original label is as follows: "*Tiaris ornatus* Wied, Bp. *F. ornata* Wied. ♂ ♀ Brasilia." The entry in the MS. Catalogue is "*Tiaris ornatus* Wied (*Fringilla ornata* Wied; *elegans* Temm.). Mas. Fem. Brasilia (M. R.)."

Coryphospingus pileatus (*Wied*).

Fringilla pileata Wied, Reise Bras., II, 1821, p. 160; Beitr. Naturg. Bras., III, i, 1830, p. 605.

Am. Mus. Nat. Hist., Nos. 4618, 4619, 4621, ♂ ♂ ad. Campos Geraës, Province of Bahia.

Only one of these birds (No. 4621), has now the original label, which reads "*T. cristatella* Spix, ♂, Brasilia, M. R." It is in worn plumage and in bad condition. The other two are well preserved.

The entry in the MS. Catalogue is as follows: "*Tachyphonus pileatus* Wied, Hartl. (*Tanagra fringilloides* Swains.; *Fringilla pileata* Wied; *Tanagra cristata* Spix; *Tachyphonus cristatellus* Gray; *Tiaris pileata* Schiff; *Emberiza ruficapilla* Sparrm.) Mas. Fem. Brasilia (M. R.)."

NOTE.—Wied's "**? Cassicus leucurus**" (Beitr., III, ii, 1831, p. 1245) has no claim to recognition, as the alleged species was not seen by Wied, his vague description being based wholly on the reports of the Camacan Indians.

Molothrus bonariensis (*Gm.*).

Oriolus violaceus WIED, Reise Bras., I, 1820, p. 53.

Icterus violaceus WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1212.

Am. Mus. Nat. Hist., No. 6672, ♂ ad.; No. 6671, ♀ ad. Rio Parahyba?

The original label, covering both specimens, is as follows: "*Icterus violaceus* mihi. Fem. Brasilia, M. R. Mas." The entry in the MS. Catalogue is: "*Molothrus sericeus* Bp.; Sclat. (*Icterus violaceus* Wied; *Ict. sericeus* Licht.; *Scolecophagus sericeus* Swains.; *Molothrus bonariensis* Caban.). Mas. Fem. Brasilia (M. R.). Trinidad, Chili, Bolivia."

Agelaius cyanopus *Vieill.*

Icterus atro-olivaceus WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1216.

Am. Mus. Nat. Hist., No. 4731, ♀. Near Lagoa Feia.

The original label is as follows: "*Icterus atro-olivaceus* mihi. Fem. Brazilia, M. R." The MS. Catalogue entry is: "*Icterus nigro-olivaceus* [sic] Wied. Brasilia (M. R.)."

This species has been incorrectly synonymized with *Pseudoleistes guirahuro* (Vieill.). (*Cf.* BURMEISTER, Thiere Bras., III, p. 265; SCLATER, Cat. Bds. Brit. Mus., XI, p. 352.)

Cyanocorax cyanopogon (*Weid*).

Corvus cyanopogon WIED, Reise Bras., II, 1821, p. 137; Beitr. Naturg. Bras., III, ii, 1831, p. 1247.

Am. Mus. Nat. Hist., No. 6773, ♀ juv.; No. 6774, ♂ ad. Province of Bahia.

The original label of No. 6773 reads: "*Cyanocorax cyanopogon* Weid. Femina, juv. Brasilien (M. R.)." The original label of No. 6774 is as follows: "*Garrulus cyanopogon* mihi. ♂ Brasilia, Provincia da Bahia. M. R." The MS. Catalogue entry is: "*Cyanocorax cyanopogon* Wied; Gray. (*Corvus cyanopogon* Wied, Temm.; *Pica cyanopogon* Wagl.; *Cyanocorax cyanopogon* Sw.) Mas. Fem. Juv. Brasilien (M. R.). Sertão von Bahia."

Cyanocorax cyanoleucus (*Wied*).

Corvus cyanoleucus WIED, Reise Bras., II, 1821, pp. 190, 345.
"*Corvus cristatellus* TEMM." WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1251.

Am. Mus. Nat. Hist., No. 6775, ♂ ad.; No. 4785, ♀ ad. Campo Geral.

The original label of No. 6775 is as follows: "*Cyanocorax cyanoleucus* Wied; *Corvus cyanoleucus* Wied; *Uroleuca* Bp.; Caban. Mas. Brasilien." Another label accompanying the same specimen is as follows: "*Corvus cyanoleucus* mihi; *Corvus cristatellus* Temm. ♂ Brasilia, M. R." The original label of No. 4785 is: "*Cyanocorax cyanoleuca* Wied; *cristatellus* Temm. Fem. Brasilien (M. R.)." The MS. Catalogue entry is: "*Cyanocorax cyanoleucus* Wied. (*Corvus cyanoleucus* Wied; *Corvus tricolor* Natt.; *C. splendidus* Licht.; *C. cristatellus* Temm.; *Pica cristatella* Wagl.; *C. cristatellus* Wied; *Cyanocorax cyanoleucus* Gray; *Uroleuca cyanoleuca* Caban.) Mas. Fem. Brasilien (M. R.)."

Sisopygis icterophrys (*Vieill.*).

Muscicapa chrysochloris WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 793.

Am. Mus. Nat. Hist., No. 4847, ♂, No. 4848, ♀, No. 4849. Rio Belmonte.

The original label of Nos. 4847 and 4848 is inscribed: "*Sisopygis icterophrys* Vieill.; *Muscicapa chrysochloris* Wied. ♀, Brasilia, ♂, M. R." The label of No. 4848 is the same except that "*Taenioptera icterophrys* Burm." is added, and there is no indication of sex.

The entry in the MS. Catalogue is *Sisopygis icterophrys* Vieill. (*Muscicapa chrysochloris* Wied.) Brasilien (M. R.)."

Machetornis rixosa (*Vieill.*).

"*Muscicapa Miles* Licht." Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 850.

Am. Mus. Nat. Hist., No. 4858. "Aus der Gegend von *Nazareth das Farinhas* am Flusse *Jagoaripa*."

The original label is inscribed: "*Machetornis rixosus* Gray; *Muscic. juazerio* Spix; *Pepoaza rixosa* Orb. Brasilien, M. R. ♂." The entry in the MS. Catalogue is: "*Machetornis rixosus* Vieill.; *Muscicapa miles* Licht. Wied; *similis* Spix. Brasilien."

Although the original label indicates the specimens as "♂," Wied described only the female, and says (l. c., p. 852) he had not received the male.

The name "*miles* Licht." was apparently a MS. name only, till published by Wied.

Platyrhynchus rostratus (*Lath.*).

Platyrhynchus leucoryphus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 974.

Am. Mus. Nat. Hist., No. 6781, ♂; No. 4874, ♀?

No. 6781 bears an original label which reads: "*Platyrhynchus leucoryphus* mihi; *Todus platyrhynchus* Gmel.? Le Platyrynque brun Desm. Mas. Brasilia, M. R. Mas." No. 4874 is labeled: "*Platyrhynchus rostratus* Less.; *Platyrhynchus leucoryphus* Wied." I find no entry of this species in Wied's MS. Catalogue.

Todirostrum poliocephalum (*Wied*).

Todus poliocephalus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 964.

Am. Mus. Nat. Hist., No. 6790, ♂; No. 6791, ♀. Rio de Janeiro.

The original label, covering both specimens, reads: "*Triccus poliocephalus* Burm.; *Todus poliocephalus* mihi. Fem. M. R. Mas. Brasilia, Rio de Janeiro." The entry in the MS. Catalogue is: "*Triccus poliocephalus* Wied. (*Todirostrum* Sclat.; *Todus poliocephalus* Wied.) Mas. Fem. Brasilia (M. R.)."

Euscarthmus nidipendulus *Wied.*

Euscarthmus nidipendulus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 950.

Am. Mus. Nat. Hist., No. 4885, ♂; No. 4884, ♀. River Mucurí; Province of Bahia.

No. 4885 alone bears the original label which reads: "*Triccus nidipendulus* Bur.; *Euscarthmus nidipendulus* Wied. Brasilia. M. R. ♂." The entry in the MS. Catalogue is: "*Triccus nidipendulus* Wied. (*Euscarthmus* Wied; *Triccus viridulus* Licht.; *Muscicapa diops* Temm.) Mas. Fem. Brasilia (M. R.)."

Euscarthmus orbitatus *Wied.*

Euscarthmus orbitatus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 958.

Am. Mus. Nat. Hist., No. 4887, ♂, and No. 4896, ♀. Southeastern Brazil.

The original label attached to No. 4896 reads: "*Triccus orbitatus* Burm.; *Euscarthmus orbitatus* Wied. Brasilien, M. R. ♂." On No. 4887 these names are simply reversed. The entry in the MS. Catalogue is: "*Triccus orbitatus* Wied. (*Euscarthmus orbitatus* Wied; *Todirostrum palpebrosum* Lafren.; *Todus adspersus* Licht.) Brasilien (M. R.)."

Sclater's description in the British Museum Catalogue (Vol. XIV, p. 79), of a bird determined as this species by Pelzeln, does not mention the faint but evident striation of the breast, the feathers of this region having pale brownish shaft streaks.

Orchilus auricularis (*Vieill.*).

Euscarthmus cinereicollis Wied, Beitr. Naturg. Bras., III, ii, 1821, p. 955.

Am. Mus. Nat. Hist., No. 4890, ♂; No. 4891, ♀. Campos Geraës, Provinces of Minas and Bahia.

The original label, covering both specimens, reads : "*Triccus auricularis* Burm.; Vieill. *Euscarthmus cinereicollis* Wied ; *Todirostrum auriculare* Lafr.; *Vermivora melanotis* Less. ; *Todus megacephalus* Sw.; *Orchilus* Licht. ♀. Brasilien, M. R. ♂." The entry in the MS. Catalogue is: "*Triccus auricularis* Vieill. (*Euscarthmus cinereicollis* Wied ; *Todirostrum auriculare* Lafr. ; *Vermivora melanotis* Less. ; *Todus megacephalus* Swains.; *Orchilus exilis* et *pygmaeus* Licht.) Brasilia (M. R.)."

Hapalocercus meloryphus (*Wied*).

Euscarthmus meloryphus WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 947.

Am. Mus. Nat. Hist., No. 6785, ♀. Campo Geral, Provinces of Minas and Bahia.

Wied's label attached to the single specimen now in the collection reads as follows : "*Euscarthmus meloryphus* mihi. Femina. Brasilia, M. R." The entry in his MS. Catalogue is : "*Euscarthmus meloryphus* Wied. (*Lepturus ruficeps* Swains.; *Hapalocercus ruficeps* Cab.) Brasilien (M. R.)."

Habrura superciliaris (*Wied*).

Euscarthmus superciliaris WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 953.

Habrura superciliaris ALLEN, Bull. Am. Mus. Nat. Hist., II, No. 3, p. 145 (June 28, 1889).

Am. Mus. Nat. Hist., No. 6789, ♂ ; No. 6785, ♀ ? Provinces of Minas and Bahia.

The original label appears only on No. 6789, and reads : "*Euscarthmus superciliaris* mihi. Tacharis à poitrine jaune d'Azara. Brazilia, M. R. Mas." The entry in the MS. Catalogue is : "*Euscarthmus superciliaris* Wied. (*Euscarthmus pectoralis* Burm. ; *pareolus* Licht.; Tachurì peccao amarillo Azara.) Paraguay, Brasilia (M. R.)."

As I have already shown (l. c.), this bird is not to be confounded with *Habrura pectoralis* (Vieill.), from which it may readily be distinguished.

[*December*,

Phyllomyias brevirostris (*Spix*).

Muscipeta asilus WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 894.

Am. Mus. Nat. Hist., No. 4907, ♂ ad.; No. 4908, ♀ ad. Near Rio de Janeiro.

The original label covered both specimens, as follows: "*Phyllomyias brevirostris* Spix; *Musc. olivacea* Orb.; *Myiobius asilus* Gr.; *Muscipeta asilus* Wied. Brasilia. Mas. M. R. Fem." The MS. Catalogue entry is: "*Phyllomyias brevirostris* Spix. (*Muscicapa* [sic] *asilus* Wied.) Brasilien (M. R.)."

Phyllomyias incanescens (*Wied*).

Muscipeta incanescens WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 898.

Phyllomyias incanescens ALLEN, Bull. Am. Mus. Nat. Hist., II, No. 3, p. 147 (June 28, 1889).

Phyllomyias berlepschii SCL., P. Z. S., 1887, p. 49; Cat. Bds. Brit. Mus., XIV, 1888, p. 123.

Am. Mus. Nat. Hist., No. 6782, ♂; No. 6783, ♀. Near Bahia.

The original label appears to have been lost. The entry in the MS. Catalogue is: "*Myiopatis incanescens* Cab. (*Muscicapa incanescens* Wied.) Brasilien (M. R.)."

Wied described both male and female, which are beyond question the two specimens here recorded.

Ornithion cinerascens (*Wied*).

Hylophilus cinerascens WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 723.

Muscicapa obsoleta TEMM., Pl. col., 46^e livr., pl. 275, fig. 1 (back too green).

Ornithion obsoletum SCL., P. Z. S., 1873, p. 578; Cat. Bds. Brit. Mus., XIV, 1888, p. 127.

Ornithion cinerascens ALLEN, Bull. Am. Mus. Nat. Hist., II, p. 148 (June, 1889).

Am. Mus. Nat. Hist., No. 6784, ♂. Barrade Jucú, near Rio Espirito Santo, Southeastern Brazil.

The single original type of this species still bears the original Wied label, reading as follows: "*Hylophilus cinerascens* mihi. ♂. Brasilia, M. R." It is entered in the MS. Catalogue as follows: "*Hylophilus cinerascens* Wied. Brasilien (M. R.)."

As I have already stated (l. c.), this proves to be the species commonly known as *Ornithion obsoletum*.

Since my former reference to the subject I have found that Mr. Sclater (Ibis, 1881, p. 311) has suggested it might prove to be the female of *Dacnis plumbea*.

NOTE.—Of the six species referred by Wied (Beitr., III, pp. 723-739) to the genus *Hylophilus* not one proves to belong to it. Later Wied in his MS. Catalogue thus identified the following: *Hylophilus guira* (ex Linn.) = *Nemosia guira*; *H. melanoxanthus* = *N. flavicollis* Vieill.; *H.* "*ruficapillus* Wied." (lapsus for *ruficeps* Wied) = *N. ruficapilla* Vieill.; *H. caeruleus* and *H. cyanoleuca* = *N. pileata* (Bodd.). His *H. guira*, *H. caeruleus*, and *H. cyanoleuca* are also entered in his MS. Catalogue under *Hylophilus!*

Elænea pagana (*Licht.*).

Muscicapa brevirostris WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 799.

Am. Mus. Nat. Hist., No. 4914, ♂; No. 4916, ♀. Rio de Janeiro?

The original label of these two specimens is as follows: "*Elainea pagana* Licht. *Muscicapa pagana* Licht. *Muscicapa brevirostris* W. ♀. Brasilien, M. R. ♂." The entry in the MS. Catalogue is the same.

? **Elænea pagana** (*Cab.*).

Muscipeta modesta WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 923.

Not in Am. Mus. Nat. Hist.; not included in the MS. Catalogue.

As the type of this species is not to be found, it is impossible to allocate the species, though it seems most likely referable to *Elænea pagana*.

Legatus albicollis (*Vieill.*).

Muscipeta citrina Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 917.

Am. Mus. Nat. Hist., No. 4917, ♂; No. 4918, ♀. "Das in meiner Sammlung ausgestellte Paar stammt aus der Gegend von *Nazareth das Farinhas* am Flusse *Jagoaripa.*"

The original label, covering both specimens, is inscribed: "*Legatus albicollis* Vieill. *Muscipeta citrina* Wied. ♂. Brasilien, M. R. ♀." The entry in the MS. Catalogue is the same, with the omission of the indication of sex.

Rhynchocyclus olivaceus (*Temm.*).

Platyrhynchas nuchalis Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 971.

Am. Mus. Nat. Hist., No. 4928, ♂. Southeastern Brazil.

The original label reads: "*Rhynchocyclus suferescens* [sic] Spix; *Platyrhynchus* Spix; *Playtr. nuchalis* Wied. Brasilien, M. R. ♂." The entry in the MS. Catalogue is: "*Rhynchocyclus sulphurescens* Spix; Sclat.; (*Cyclorhynchus nuchalis* Burm.; *Platyrhynchus nuchalis* Wied; *Cyclorhynchus sulphurascens* Caban.; *Rhynchocyclus sulphurascens* Caban.). Brasilien (M. R.). Sta. Martha, Bogota."

This species has usually been wrongly referred to *R. sulphurescens* (Spix). The type shows it to be an albinistic specimen of *R. olivaceus* (Temm.), the pale whitish yellow nuchal band being due to albinism. It is unsymmetrical in extent on the two sides of the head, reaching the rictus on the left side, and only to the auriculars on the right side. In other respects it agrees with ordinary specimens of *R. olivaceus.*

Rhynchocyclus flaviventris (*Wied*).

Muscipeta flaviventris Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 929.

Am. Mus. Nat. Hist., No. 4930, ♂ ad.; No. 4929, ♀ ad. Rivers Mucurí and Alcobaça.

The original label, covering both specimens, is inscribed: "*Rhynchocyclus flaviventris* Spix. *Platyrhynchus flaviventris* Spix.

Tyrannula flaviventris Hartl. *Muscipeta flaviventris* Wied. Mas. Brasilien, M. R. Fem." The entry in the MS. Catalogue is the same, with the addition of "Amazonas, Bogota, Trinidad."

Rhynchocyclus? sp. incog.

Muscipeta platyrhyncha Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 932.

The type of this species is not in the collection and I am unable to satisfactorily identify Wied's description.

A pencil entry in his MS. Catalogue, under the genus *Tyrannula*, reads as follows: "*Muscicapa* [sic] *platyrhynchus* Wied. (*Myiobius platyrhynchus* Gray) [Bp.] Conspectus, p. 190." A marginal note, also in pencil and in German script reads: "Ist zu vergleichen." He evidently followed Bonaparte in referring the species to *Tyrannula*. Giebel identifies it with *Rhyncocyclus megacephalus*, but most authors have wholly ignored the species.

The description indicates a bird of the size and general form of *R. flaviventris*, but in color more resembling the species of *Sublegatus*.

Conopias trivirgata (*Wied*).

Muscicapa trivirgata Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 871.

Am. Mus. Nat. Hist., No. 4926, ♀. Bahia.

The original label is as follows: "*Myiozetetes similis* Spix. *Muscicapa trivirgata* Wied. Brasilien, M. R. Femina." The entry in the MS. Catalogue is the same, with the omission of "Femina."

Hirundinea bellicosa (*Vieill.*).

Muscicapa rupestris Wied, Reise nach Bras., I, 1820, p. 345.

Platyrhynchus rupestris Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 977.

Am. Mus. Nat. Hist., No. 4956, ♂; No. 4957, ♀. River Belmonte, Esperito Santo.

The original label, covering both specimens, reads: "*Hirundinea ferruginea* Gm.; *Platyrhynchus rupestris* W.; *Tyrannus belli-*

cosus Vieill. ♀. Brasil, M. R. ♂." The entry in the MS. Catalogue is: "*Hirundinea ferruginea* Gmel. (*Platyrhynchus rupestris* Wied; *Todus ferrugineus* Gmel.; *Tyrannus bellicosus* Vieill.; *Platyrhynchus hirundinaceus* Spix; *Hirundinea bellicosa* d'Orb.; *Myiarchus ferrugineus* Caban.; *Muscivora ferruginea* Cab.; *Phoneutria ferruginea* Cab.) Mas. Fem. Brasilia (M. R.)."

Pyrocephalus rubineus (*Bodd.*).

Muscipeta strigilata Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 900.

Am. Mus. Nat. Hist., No. 4972, ♀ ad., "aus der Gegend von *Camamú*, südlich von *Bahid*."

The original label reads as follows: "*Pyrocephalus parvirostris* Go. *Muscicapa* [sic] *strigilata* Wied. Brasil, M. R. ♀." The MS. Catalogue entry is: "*Pyrhocephalus parvirostris*. (*Muscicapa* [sic] *strigilata* Wied.) Femina. Brasilien (M. R.)."

Weid says (Beiträge, III, p. 902): "Dieser Vogel is mir nur im weiblichen Geschlechte vorgekommen."

There are, however, two males of this species in the Maximilian Collection, labeled, and also entered in his Catalogue, as "*Pyrocephalus coronatus* auct." "Brasilia, M. R." The *P. coronatus* is not, however, recorded in the "Beiträge."

Empidochanes fuscatus (*Wied*).

Muscipeta fuscata Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 902.

Am. Mus. Nat. Hist., No. 4977, ♂; No. 6780, ♀. Near Rio de Janeiro?

The original label, covering both specimens, is as follows: "*Empidochanes olivus* Bodd. *Muscipeta fuscata* Wied. ♂. Brasilien, M. R. ♀."

The entry in the MS. Catalogue is: "*Empidochanes olivus* Bodd. (*Muscicapa* [sic] *fuscata* Wied; *Muscicapa oliva* Bodd.; *Musc. agilis* Gmel.; *Tyrannula fuscata* Hartl.; *Myiobius fuscatus* et *M. agilis* Bp.). Amazonas, Tobago, Para? Mas. Fem. Brasilien (M. R.)."

Empidonomus varius (*Vieill.*).

Muscipeta ruficauda Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 920.

Am. Mus. Nat. Hist., No. 4924, ♂ ad.; No. 4925, ♀ ad. Vicinity of Bahia.

The original label, covering both specimens, is as follows: "*Empidonomus varius* Vieill. *Muscipeta ruficauda* Wied. *Musc. varia* Vieill. *Tyrannus leucotis* Sw. *Tyrannula Tschudii* Hartl. ♀. Brasilien, M. R. ♂." The entry in the MS. Catalogue is: "*Empidonomus varius* Vieill. (*Muscicapa* [sic] *ruficauda* Wied.) Mas. Fem. Brasilien."

Machæropterus strigilatus (*Wied*).

Pipra strigilata Wied, Reise Bras., I, 1827, p. 187; Beitr. Naturg. Bras., III, i, 1830, p. 430.

Am. Mus. Nat. Hist., Nos. 6792, 6793, ♂ ♂ ad. Southeastern Brazil.

The original label on one of the two males reads as follows: "*Pipra strigilata* mihi. Mas. Brasilia, M. R." The other label reads the same, except containing the words "Mas. Fem.," the two birds having been originally mounted on one perch. The entry in the MS. Catalogue is: "*Pipra strigilata* Wied. Mas. Fem. Brasilia."

Since Cabanis and Heine adopted (Mus. Heineanum, ii, 1859, p. 94) the name *regulus* (from Hahn) for this species this name has been currently adopted for it. Mr. Sclater gives (Cat. Bds. Brit. Mus., XIV, p. 304) the date of Hahn's name as 1821. As the first volume of Weid's "Reise" was published in 1820, Wied's name thus has priority.

Heteropelma turdinum (*Wied*).

Muscicapa turdina Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 817.

Am. Mus. Nat. Hist., No. 5096, ♂. Province of Bahia.

The original label is: "*Heteropelma turdinum. Muscicapa turdina* Wied. Brasilien, M. R. ♂." The entry in the MS. Catalogue is: "*Heteropelma turdinum* Sclat. Wied. (*Muscicapa turdina* Wied; *Ptilochlor. rufo-olivaceous* Lafr.) Mas. Brasilien (M. R.)."

Heteropelma virescens (*Wied*).

Muscicapa virescens Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 802.

Am. Mus. Nat. Hist., No. 5066, ♀. Arrayal da Conquista, interior of the Province of Bahia.

The original label has the following inscription: "*Heteropelma virescens* Lafr.; *Heteropelma unicolor; Ptilochloris virescens* Lafr.; *Muscicapa virescens* Wied. ♀. Brasil. M. R." In the MS. Catalogue the entry is: "*Heteropelma virescens* Lafr. (*Muscicapa virescens* Wied.) Fem. Brasilien (M. R.)."

Neopelma aurifrons (*Wied*).

Muscicapa aurifrons Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 829.
Muscicapa brevipes Wied, *ib.*, p. 831.

Am. Mus. Nat. Hist., No. 5065, ♂ (=*M. aurifrons* Wied). Vicinity of Bahia. No. 6778, "♂" (=*M. brevipes* Wied). Southeastern Brazil.

The original label of *M. aurifrons* Wied is as follows: "*Heteropelma aurifrons. Muscicapa aurifrons* Wied. Mas. Brasilien. M. R." It is entered in the MS. Catalogue as "*Heteropelma aurifrons* Sclat. (*Muscicapa aurifrons* Caban.; *Eusarthmus aurifrons* Burm.; *Muscicapa luteocephala* Lafr.) Brasilia (M. R.)."

The original label of *M. brevipes* is: "*Muscicapa brevipes* mihi. Brasilia, M. R. ♂." I am unable to find any entry of this species in the MS. Catalogue.

Wied's *M. brevipes* is a very young bird, and I have little doubt it is the young of his *M. aurifrons*, with which it agrees in all details of structure. It is, however, smaller, with the head quite differently colored. The forehead, loral region, and malar area are ashy; a broad band of ashy green runs from the forehead to the nape, occupying about one-third of the crown, each side of which is a broad supercialiary band (about equal in width to the median band) of pale ochraceous, these bands nearly meeting on the nuchal region and occupying the sides of the neck. This feature is not clearly indicated in Wied's description. There is no concealed yellow on the anterior part of the crown, as in the adult, and the anterior part of the interscapular region is faintly washed with yellowish brown, and there is also a mixture of yellowish brown feathers on the breast. The specimen was apparently changing from the young to the adult plumage when taken, though still so young as to show the thickened membraneous border of the mandibles at the corners of the mouth characteristic of young birds. The ochraceous feathers of the sides of the head and breast are apparently remnants of an earlier plumage.

Wied's *M. brevipes* seems to have been noticed by very few writers; it is not mentioned in Gray's "Hand-List," nor in Giebel's "Thesaurus," nor have I met with any mention of it by Sclater or Cabanis. Burmeister (Thiere Bras., II, p. 480) apparently refers to it as "*Elaenea brevipes* Pr. Max."

Pachyrhamphus niger polychropterus (*Vieill.*).

Muscipeta splendens WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 906 (male). (In part referable to *P. atricapillus.*)

Am. Mus. Nat. Hist., No. 5804, ♂ ad. Southeastern Brazil.

The original label reads: "*Pachyramphus polychropterus* Vieill. *Pachyrhynchus Spixii* Sw. *Muscipeta splendens* Wied. *Zetetes* Caban. Brasilien, M. R, ♂." The entry in the MS. Catalogue is: "*Pachyramphus splendens* Wied. Brasilien (M. R.)."

Wied's "anderer sehr ähnlicher männlicher Vogel" (l. c., p. 908, last paragraph) is an adult male *P. atricapillus*, as shown by his specimen (No. 5088).

Pachyrhamphus atricapillus (*Gm.*).

Muscipeta marginata WIED, Beitr. Naturg. Bras., III, ii, 1851, p. 909 (female and young male).

Am. Mus. Nat. Hist., No. 5085, ♂ juv.; No. 5086, ♀ ad. Southeastern Brazil.

The original label is as follows: "*Pachyramphus atricapillus* Gm.; *Pachyrhynchus Swainsoni* Jard.; *Muscipeta marginata* Wied.; *Bathmidurus* Caban.; *albifrons* Sw. ♂. Brasilien. M. R." The entry in the MS. Catalogue is as follows: "*Pachyramphus marginatus* Wied (*atricapillus* Gmel.). Mas. Fem. Brasilien (M. R.)."

Wied's "*Beschreibung des männlichen Vogels*" (l. c.) is in reality that of the female bird, based doubtless on the specimen here recorded. His female, on the other hand, proves to be an immature male.

Pachyrhamphus rufus (*Bodd.*).

Muscipeta aurantia WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 911.

Am. Mus. Nat. Hist., No. 5090, ♂; No. 5807, ♀. Eastern Brazil.

The original label, covering both specimens, is: "*Pachyramphus aurantius* W. *P. polychropterus* fem. auct. ♀. Brasilia. M. R. ♂." The entry in the MS. Catalogue is: "*Pachyramphus aurantius* Gmel. (*Tityra castanea* Jard. et Selb.) Mas. Fem. Brasilien (M. R.)."

Lathria vociferans (*Wied*).

Muscicapa vociferans WIED, Reise Bras., I, 1821, p. 242.

"*Muscicapa plumbea* ILLIG." WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 806.

Muscicapa plumbea LICHT., Verzeich. d. Doubl., 1823, p. 53.

Am. Mus. Nat. Hist., No. 5198, ♂ ad.; 5199, ♀ ad. Rio Mucuri? Rio Alcobaça? Campos Geraës?

The original label of these two birds is: "*Lipaugus plumbeus* Hartl.; *Muscicapa plumbea* Licht. ♀. Brasilia, M. R. ♂." The entry in the MS. Catalogue is: "*Lipaugus cinereus* Vieill. (*Muscicapa plumbea* Licht.; *Musc. vociferans* Wied; Sabia de mato virgem brasiliens.) Mas. Fem. Brasilien."

Aulia hypopyrrha (*Vieill.*).

Muscicapa sibilatrix WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 810.

Am. Mus. Nat. Hist., Nos. 6796 and 6797, ♂ ♂. "Strasse des Capitao Filisberto."

The original label belonging to these specimens is as follows: "*Lipaugus hypopyrrhus* H.; *Muscicapa sibilatrix* mihi. ♂. Brasilia, M. R." The entry in the MS. Catalogue is: "*Lipaugus sibilatrix* Wied. (*Lipaugus hypopyrrhus* Hartl.; *Ampelis hypopyrrha* Vieill.) Mas. Fem. Brasilia."

No. 6797 is the "männlichen Vogel" with the citron yellow breast-tufts first described (l. c., p. 811); No. 6797 is the "Andere Männchen" (l. c., p. 813), with the "röthlich-braungelb, oder etwa lebhaft orangen-bräunlich" breast-tufts. This is probably the "Fem." of the MS. Catalogue.

Lipaugus simplex (*Licht.*).

"*Muscicapa rustica* LICHT." WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 866.

Am. Mus. Nat. Hist., No. 5104, ♂ ad.: No. 5103, ♀ ad.; No. 5102, ♂ juv. Southeastern Brazil.

The original label of Nos. 5102 and 5103 is as follows: "*Lipaugus simplex* Licht.; *Muscicapa rustica* Licht. Wied; Le Souiriri commun d'Azara; *Muscicapa cinerascens* Spix. ♀. Brasilien, M. R. ♂." The label of No. 5104 is: "*Lipaugus simplex* Licht. *Muscicapa rustica* Wied, Licht. Brasilien, M. R. ♂." Not entered in the MS. Catalogue.

The name "*rustica* Licht." appears to have been a MS. name, adopted by Wied.

Ptilochloris squamata (*Wied*).

Muscicapa squamata WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 814.

Not in the American Museum of Natural History.

The entry in the MS. Catalogue is: "*Ptilochloris squamata* Wied. (*Musicapa squamata* Wied; *Lanius arcuatus* Geoffr.? *Laniisoma arcuatum* Sclat.; *Ptiloch arcuatus* Lafr.) Brasilia (M. R.)."

The only specimen of this species in the mounted collection bears a Verreaux label.

Attila brasiliensis *Less.*

Muscicapa uropygiata Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 868.

Am. Mus. Nat. Hist., No. 4991, ♂ ad. Rio Doce, Espirito Santo.

The original label is: "*Attila brasiliensis* Less. *Muscicapa uropygiata* Wied. *Dasycephala* Sw. *Dasyopsis* Rchb. Brasilien, M. R. ♂." The MS. Catalogue entry is: "*Attila uropygiata* Wied. (*Attila brasiliensis* Less.) Brasilien."

Wied described only the male, and says he met with the species only once.

Ampelion melanocephalus (*Wied*, or *Swain.*).

Procnias melanocephala Wied, Reise Bras., I, 1820, p. 168; Beitr. Naturg. Bras., III, i, 1830, p. 401.
Procnias melanocephala Swain., Zool. Ill., I, 1820, pl. 25.

Am. Mus. Nat. Hist., No. 6798, ♂ ad. Rio Itabapuana.

The entry in the MS. Catalogue is: "*Carpornis melanocephala* Wied. (*Cot. speciosa* Thunb.; *Procnias melanocephala* Swain.) Mas. Brasilia." The original label reads: "*Ampelis melanocephala* mihi. Brasilia, M. R. ♂. Itape mirim. (Occuli coccin.)"

It appears that both Wied and Swainson described this species in the year 1820, both, by coincidence, giving it the same name, and each describing from specimens they themselves collected. Only the "Beiträge" is usually quoted, and Swainson is given as the authority for the specific name. The first volume of the "Reise" and the early part of the first volume of Swainson's "Illustrations" were published the same year, and it seems impossible to decide which has priority.

Xipholena atropurpurea (*Wied*).

Ampelis atropurpurea Wied, Reise Bras., I, 1820, p. 264.
"*Ampelis purpurea* Licht." Wied, Beitr. Naturg., III, i, 1830, p. 397.

Am. Mus. Nat. Hist., No. 6801, ♂ ad. Rio Mucurí.

The entry in the MS. Catalogue is: "*Ampelis purpurea* Licht. (*atropurpurea* Wied; *Cot. purpurea* Gray). Mas. Fem. Juv. Brasilien." The inscription on the original label of the male bird (the only one of the three specimens now to be found) is as follows: "*Ampelis atropurpurea* mihi. ♂. Brasilia, M. R."

Wied seems to have abandoned needlessly his name *atropurpurea* for the later given one, *purpurea*, of Lichtenstein.

Furnarius albogularis (*Spix*).

Opetiorhynchus ruficaudus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 671.

Am. Mus. Nat. Hist., No. 6802. Minas Geraës.

Wied's single type specimen of this species bears the following original label: "*Opetiorhynchus ruficaudus* mihi. Brasilia. Minas Geraës." It is entered in the MS. Catalogue as follows: "*Furnarius rufus* Gm., Sclat. (*Furnarius rufus* d'Orb.; *Turdus badius* Licht.; *Figulus badius* Reichenb.; *Opetiorhynchus ruficaudus* Wied.) Brasilien (M. R.)."

Note.—Wied's *Opetiorhynchus rufus* (Beitr., III, ii, p. 667), which he identified with "*Merops rufus* Linn., Gmel., Lath.," proves, as shown by one of his original specimens still extant in the collection (No. 6803, ♂ ad.), that the species should be synonymized with *Furnarius figulus* (Licht.), as various authors have already recognized.

Sclerurus fuscus (*Wied*).

Tinactor fuscus Wied, Beitr. Naturg. Bras., III, ii, p. 1106 (in part).

Sclerurus fuscus Ridgw., Proc. U. S. Nat. Mus., 1889, p. 28.

Am. Mus. Nat. Hist., No. 6807, ♂ ad. Southeastern Brazil.

The original label of this specimen reads: "*Tinactor fuscus* mihi. Brasilia, M. R. ♂." The catalogue entry is: "*Sclerurus* (*Tinactor* Wied) *fuscus* Wied. (*Myiothera umbretta* Licht., Ménétr.; *Myioth. ecaudata* Vieill.). Mas. Fem. Brasilien, M. R."

This entry covers the two specimens Mr. Ridgway, in his recent revision of the genus *Sclerurus* (Proc. U. S. Nat. Mus., 1889, p. 21–31) refers respectively to *S. fuscus* (Wied) and *S. umbretta* (Licht.).

Sclerurus umbretta (*Licht.*).

Tinactor fuscus WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1106 (in part). (*Cf.* RIDGW., Proc. U. S. Nat. Mus., 1889, p. 23.)

Am. Mus. Nat. Hist., No. 6806, ♀. Southeastern Brazil.

The label transcribed under the preceding species apparently originally covered this specimen also, as does the transcript from the MS. Catalogue.

Synallaxis ruficapilla *Vieill.* et Synallaxis azaræ *d'Orb.*

Synallaxis cinereus WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 685.

There are five specimens in the Wied Collection labeled by him "*Synallaxis cinereus* mihi. *Parulus ruficeps* Spix. Mas. [Fem., etc.] Brasilia. M. R." Three of them (A. M. N. H., Nos. 6812, 6813, ♂ ♂ ad.; No. 6811, juv.) are *S. ruficapilla* Vieill., and the other two (No. 6814, "♀," and No. 6815, juv.) are *S. azaræ* d'Orb. (= *S. frontalis* Pelz.). Another specimen (No. 5204, ad.), without label, but evidently a Wied specimen, is also referable to *S. azaræ*.

The specimens actually described by Wied, however, are clearly *S. ruficapilla*.

I here revive *S. azaræ* for the following reasons: *S. azaræ* was indicated in the text of the "Oiseaux" of D'Orbigny's "Voyage" (1833–44, p. 246), and thus has at least fifteen years' priority over *frontalis* of Pelzeln (1859), to which Mr. Sclater (P. Z. S., 1874, p. 8) has already referred it. In the MS. Catalogue of the Lafresnaye Collection in the Museum of the Boston Society of Natural History are entered three specimens (Nos. 2458, 2459, 2460) as "*Synallaxis azaræ* Lafr. et d'Orb.," each being marked "type." A comparison of these specimens with three specimens in the Lawrence Collection, labeled by Mr. Sclater "*Synallaxis frontalis* Pelz.," shows the two species to be identical.

Synallaxis cinnamomea (*Gm.*).

Synallaxis caudacutus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 692.

Am. Mus. Nat. Hist., No. 6817, ♂ ad. Southeastern Brazil (Rio de Janeiro?).

The original label is as follows: "*Synallaxis caudacuta* mihi. Mas. L'Inondé d'Azara. Brasilia, M. R." It is entered in the MS. Catalogue as: "*Leptoxiura cinnamomea* Gmel., Reich. (*Sylvia russeola* Vieill.; l'Inondé d'Azara; *Synallaxis ruficauda* Vieill.; *Sphenura mentalis* Licht.; *Synallaxis caudacuta* Wied.) Mas. Fem. Brasilien (M. R.)."—Only the male seems now to be extant.

Synallaxis torquata *Wied.*

Synallaxis torquatus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 697.

Not in American Museum of Natural History.

The entry in the MS. Catalogue is: "*Synallaxis torquata* Wied (*bitorquata* Lafr.; *Melanopareia torquata* Reich.). Brasilien (M. R.)."

Wied described the adult male and female and a young female. None of these specimens can now be found.

Synallaxis pallida *Wied.*

Synallaxis pallidus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 690.

Am. Mus. Nat. Hist., No. 6816, ♀ ad. Campos Geraës.

The original label is as follows: "*Synallaxis pallida* mihi. ♀. Brasilia. M. R." The entry in the MS. Catalogue is: "*Synallaxis pallida* Wied, Sclat. Brasilien"

Phacellodomus rufifrons (*Wied*).

Anabates rufifrons Wied, Reise nach Bras., II, 1821, p. 177; Beitr. Naturg. Bras., III, ii, 1831, p. 1191.

Sphenura frontalis Licht., Verzeich. d. Doubl., 1823, p. 42.

Am. Mus. Nat. Hist., No. 5210, ♂ ad.; No. 5211, ♀ ad. "Sertong der Provinzen *Minas Geraës* und *Bahid*."

The original label, covering both birds, reads as follows: "*Synallaxis rufifrons.* ♀ ♂. Brasilia. M. R." The entry in the MS. Catalogue is: "*Phacellodomus rufifrons* Spix. (*Anabates rufifrons* Wied; *Phacellod. rufifrons* Reich., Sclat.; *Malurus garrulus* Swain.; *Anumbius frontalis* Orb.; *Synallaxis rufifrons* Gray; *Phacellod. frontalis* Caban.) Mas. Fem. Brasilien (M. R.)."

Wied's name *rufifrons* has two years' priority over *frontalis* of Lichtenstein, and should be adopted as the name of the species.

Thripophaga erythrophthalma (*Wied*).

Anabates erythrophthalmus WIED, Reise nach Bras., II, 1821, p. 147; Beitr. Naturg. Bras., III, ii, 1831, p. 1175.

Am. Mus. Nat. Hist., No. 6805, ♀ ad.; No. 6810, ♂ ad. Rio Catolé.

The original label, covering both specimens, is as follows: "*Anabates erythrophthalmus* mihi. Mas. Fem. Brasilia, M. R." The entry in the MS. Catalogue is: "*Thripophaga erythrophthalma* Wied. (*Anabates erythrophthalmus* Wied.) Brasilien (M. R.)."

Thripophaga macroura (*Wied*).

Anabates macrourus WIED, Reise nach Bras., II, 1821, p. 147.
"*Anabates striolatus* TEMM." WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1182; TEMM., Pl. Col., livr. 40^e, 1823, pl. 238, fig. 1.
Sphenura striolata LICHT., Verzeich. d. Doubl., 1823, p. 42.

Am. Mus. Nat. Hist., No. 6804, ♂ ad. Southeastern Brazil.

The original label reads: "*Anabates macrourus* mihi. Brasilia—M. R." The MS. Catalogue entry is: "*Thripophaga striolata* Licht. (*Sphenura striolata* Licht.; *Anabates striolatus* Spix; *Anabat. macrourus* Wied; *Xenops striolatus* Less.) Brasilien (M. R.)."

Although Wied's name *macrourus* has two years' priority over *striolata* of Lichtenstein, Wied abandoned his own name in favor of the latter (*cf.* Beiträge, III, p. 1186).

Automolus ferruginolentus (*Wied*).

Anabates ferruginolentus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 1166.

Am. Mus. Nat. Hist., No. 6809, ♀ ad.; No. 5214, ♂ ad. Interior of the Province of Bahia.

The original label, covering both specimens, is as follows: "*Anabates ferruginolentus* mihi. ♀ ♂. Brasilia—M. R." The entry in the MS. Catalogue is: "*Automolus ferruginolentus* Sclat., Wied. (*Anabates leucophrys* Jard. et Selb.; *Cichlocolaptes ferruginolentus* Reich.; *Anabates ferruginolentus* Wied; *Sphenura dendrocolaptes* Licht.; *Ipoborus* Caban.) Brasilien (M. R.)."

Automolus leucophthalmus (*Wied*).

Anabates leucophthalmus Wied, Reise nach Bras., II, 1821, p. 141; Beitr. Naturg. Bras., III, ii, 1831, p. 1170.

Sphenura sulphurascens Licht., Verzeich. d. Doubl., 1823, p. 41.

Am. Mus. Nat. Hist., No. 5222, ♂ ad.; No. 6808, ♀ ad. Rio Ilhéos.

The original label, covering both specimens, reads: "*Anabates leucophthalmus* mihi. *Philidor albogularis* Spix. ♀ ♂. Brasilia—M. R." The entry in the MS. Catalogue is as follows: "*Automolus leucophthalmus* Wied, Reich. (*Anabates leucophthalmus* Wied; *Automolus sulphurascens* Reichenb.; *Sphenura sulphurascens* Licht.; *Ipoborus sulphurascens* Cab.; *Philidor albogularis* Spix.) Mas. Fem. Brasilien (M. R.)."

Wied's name *leucophthalmus* has two years' priority over *sulphurascens* of Lichtenstein, although the latter has been currently adopted for this species.

Automolus rectirostris (*Wied*).

Opetiorhynchus rectirostris Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 679.

Am. Mus. Nat. Hist., No. 5223, ♀ ad. Campos Geraës.

The single type specimen (*cf.* Beitr., l. c.) has still the original Wied label, which is inscribed as follows; "*Opetiorynchus rectiros-*

tris mihi. ♀. Brasilia, M. Reise." The specimen is entered in the MS. Catalogue as follows: "*Furnarius rectirostris* Wied. Brasilien."

This species, which by Reichenbach was referred to the genus *Furnarius*, and by Burmeister was thought should, perhaps, be the type of a new genus, proves to be a true *Automolus*. (*Cf.* Pelzeln, Ibis, 1881, p. 411.) It may have been since redescribed under some other name, but I am unable to identify it with any of the commonly-recognized species of either *Automolus* or allied genera. Wied's description of the species is excellent, and calls for no comment.

Philydor atricapillus (*Wied*).

Anabates atricapillus WIED, Reise nach Bras., II, 1821, p. 147; Beitr. Naturg. Bras., III, ii, 1831, p. 1187.

Sphenura superciliaris LICHT., Verzeich. d. Doubl., 1823, p. 41.

Philydor superciliaris SPIX, Av. Bras., I, 1824, p. 73, pl. 73, fig. 1.

Am. Mus. Nat. Hist., No. 5229, ♀ ad.; No. 5229 *bis*, ♂ ad Southeastern Brazil.

The original label, covering both specimens, is inscribed: "*Anabates atricapillus* mihi. *Phylidor superciliaris* Spix, ♀ ♂. Brazilia, M. R." The entry in the MS. Catalogue is: "*Philidor superciliaris* Spix. (*Anabates atricapillus* Wied; *Caniveti* Less.; *Sphenura superciliaris* Licht.; *Xenops melanocephalus* Less.; *Anabatis superciliaris* Burm.) Mas. Fem. Brasilian (M. R.)."

Wied's name *atricapillus* has two years' priority over *superciliaris* Licht., the name usuully adopted.

Sittasomus erythacus (*Licht.*).

Sittasomus olivaceus WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1146.

Am. Mus. Nat. Hist., No. 5238, ♂ ad. Southeastern Brazil.

The original label reads: "*Dendrocolaptes sylviellus* Tem. *Sittasomus* Sw. Brasilia—M. R. ♂." The entry in the MS. Catalogue is: "*Sittasomus sylviellus* Temm. (*Neops spirurus* Vieill.; *Sittasomus Temminckii* Less.) Brasilien (M. R.)."

There is a second specimen in the collection labeled in pencil on the bottom of the perch: "*Dendrocolaptes Sylviallus* [sic]. Fem. Max. Coll. Brazil." As Wied says (Beitr., III, p. 1148): "Den *weiblichen Vogel* habe ich nicht erhalten," I do not record this specimen as a Wied type.

Glyphorhynchus cuneatus (*Licht.*).

Glyphorhynchus ruficaudus Wied, Beitr. Naturg. Bras., III, ii, p. 1150.

Am. Mus. Nat. Hist., No. 5246, ♂ ad.; No. 5243, ♀ ad. Southeastern Brazil.

The original label, covering both specimens, reads as follows: "*Glyphorhynchus ruficaudus* mihi. *Dendrocol. cuneatus* Licht. ♀ ♂. Brasilia—M. R." The MS. Catalogue entry is: "*Glyphorhynchus* (Wied) *cuneatus* Licht. (*Dendroc. cuneatus* Licht.; *Zenophasia platyrhyncha* Swains.; *Glypho. cuneatus* Bp.) Brasilien (M. R.)."

Picolaptes bivittatus (*Licht.*).

Dendrocolaptes rufus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 1130.

Not in Am. Mus. Nat. Hist., and not entered in the MS. Catalogue.

Wied cites (l. c.), as a synonym of this species, "*Dendrocolaptes bivittatus* Spix, Tab. 90, Fig. 1."

Note.—Wied's "**Dendrocolaptes guttatus** Licht." (Beitr., III, ii, p. 1116)=*Xiphocolaptes albicollis* (Vieill.), as it is currently referred, and hence of course is not *Dendrocolaptes guttatus* of Licht.=*Dendrornis guttatus* (Licht.).

Thamnophilus ambiguus *Sw.*

Thamnophilus nigricans Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 1006.

Am. Mus. Nat. Hist., No. 5306, ♂ ad.; No. 6822, ♂ nearly ad.; No. 6818, ♀ ad.; No. 5312, ♀ ad. (albinistic).

The original labels read as follows: No. 5306, "*Thamnophilus nigricans* Wied (*pileatus* Lath.; *cirrhatus* Linn.; *atricapillus* Vieill.; *cirrhatus* Gray, Caban.). Brasilien. M. R. Mas." No. 6822: "*Thamnophilus nigricans* Wied. *Lanius canadensis* Linn. *Lanius pileatus* Lath. *Turdus cirrhatus* Gmel. *Tyrannus atricapillus* Vieill. *Tham. cirrhatus* Cab., Gray. Brasilien, M. R. Mas." Nos. 6818 and 5312: "*Thamnophilus nigricans* mihi. Fem. Brasilia, M. R. Fem. var." The MS. Catalogue entry is: "*Thamnophilus nigricans* Wied. (*Th. ambiguus* Swains.; *naevius* Vieill. [nec Gmel.]; *ferrugineus* Less.) 2 männl. Exempl. 2 weibliches. Brasilia (M. R.)."

The "Fem. var." (No. 5312) is albinistic, having the nape, forehead, and sides of the crown pure white.

Thamnophilus cristatus (*Wied*).

Thamnophilus cristatus Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 1002.

Am. Mus. Nat. Hist., No. 6819, ♂ ad.; No. 6820, ♀ ad.; No. 6821, ♀ juv. Campo Geral, Province of Bahia.

The original label, covering Nos. 6819 and 6820, reads as follows: "*Thamnophilus cristatus* Wied. (*Lanius poecilurus* Cuv.; *Turdus cristatus* Lath.?) ♀ ♂. Brasilien, M. R." The label of No. 6821 reads: "*Thamnophilus cristatus* mihi. Femina juv. Brasilia, M. R." The MS. Catalogue entry is: "*Thamnophilus cristatus* Wied. (*L. atricapillus* Merr.; *pileatus* Lath.; *cirrhatus* Gmel.; Gray; Caban.) Mas. Fem. Brasilien (M. R.)."

Thamnophilus ruficapillus *Vieill.*

Thamnophilus scalaris Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 999 (ex Licht. MS.).

Am. Mus. Nat. Hist., No. 5313, ♂ ad.; No. 5315, ♀ ad. Southeastern Brazil.

The original label, covering both specimens, is as follows: *Thamnophilus scalaris. Lanius scalaris* Licht. ♀ ♂. Brasilia, M. R." The MS. Catalogue entry is: "*Thamnophilus scalaris* Licht., Wied (*ruficapillus* Vieill.; *atropileus* Orb.; *torquatus* Swains.; *pectoralis* Swains.; Batara acanelado, Azara.) Mas. Fem. Brasilien (M. R.)."

NOTE.—**Thamnophilus guianensis** WIED, Beitr., III, ii, 1831, p. 1016=*Cyclorhis viridis* (Vieill.), as shown by his specimen (No. 4303, A. M. N. H.).

Dysithamnus mentalis (*Temm.*).

Myiothera poliocephala WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1098.

Am. Mus. Nat. Hist., No. 5322, ♂ ad.; No. 5321, ♀ ad. Southeastern Brazil.

The original label, apparently covering both the specimens, is as follows: "*Dysithamnus mentalis* Tem. *Myiothera* Tem. *Myiothera poliocephala* Wied. ♂ ♀. Brasilien, M. R." The MS. Catalogue entry is: "*Dysithamnus mentalis.* (*Myiothera poliocephala* Wied.) Brasilien (M. R.)."

Dysithamnus plumbeus (*Wied*).

Myiothera plumbea WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1080.

Am. Mus. Nat. Hist., No. 5323, ♂ ad. Southeastern Brazil.

The original label has the following: "*Dysithamnus plumbeus* Scl. *Thamnophilus stellaris* Spix. *Myiothera plumbea* Wied. Brasilien, M. R. Mas." The entry in the MS. Catalogue is the same.

Thamnomanes cæsius (*Wied*).

"*Muscicapa cæsia* P. MAX." TEMM., Pl. Col., 3^e livr., 1820, pl. 17.

Muscicapa caesia WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 826.

Lanius caesius LICHT., Verzeich. d. Doubl., 1823, p. 46 (= "*M. cæsia* Pr. Max." Temm.).

Am. Mus. Nat. Hist., No. 5320. Province of Bahia.

The original label is as follows: "*Thamnomanes caesius. Muscicapa caesia* Wied. Brasilien, M. R." The entry in the MS.

Catalogue is as follows: "*Thamnomanes caesius* Wied, Sclat. (*Muscicapa caesia* Wied). Brasilien."

This is probably the specimen figured by Temminck (l. c.), as he says: "Nous tenons cette espèce des soins obligeans du prince Maximilien de Neuwied.....Nous trouverons souvent l'occasion de publier dans ce recueil, des espèces sur lesquelles ce voyageur a donné des notices; plusieurs sont nouvelles ou n'ont point encore été figurées."

Herpsilochmus rufimarginata (*Temm.*).

Myiothera scapularis WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1083.

"*Myiothera variegata* LICHT." WIED, Ibid., p. 1086.

Am. Mus. Nat. Hist., Nos. 5378 and 5378 ♀ ♂ ad.; Nos. 5379 and 5380, ♂ ♂ ad. Interior of the Province of Brazil.

The original label, covering Nos. 5378 and 5379, reads as follows: "*Formicivora scapularis* Licht., Wied. *Herpsilochmus rufimarginatus* Temm. ♀. Brasilien, M. R." The original label of No. 5280 reads: "*Formicivora scapularis* W. *Myiothera rufimarginata* Licht. *Herpsilochmus rufimarg.* Cab. Brasilien, M. R. ♂." The entry in the MS. Catalogue is practically the same as the last transcript.

There is no specimen of Wied's *Myiothera variegata* now in his collection thus labeled, and none is indicated under this name in his MS. Catalogue, where the entry is simply "*Formicivora variegata* Wied." Neither is there any specimen extant in his collection corresponding with his description of his "Junger Männchen" *M. scapularis.* I therefore have a strong suspicion that the above-indicated No. 5379, ♂ ad., is in reality the male of *M. variegata*, which Wied says (Bietr., III, ii, 1087) is similar to *M. scapularis*, except that the ash-gray color of the back has some black spots. No. 5379 shows very distinct black streaks on the interscapulars.

No. 5337, ♀ ad., I have no doubt is the female of Wied's *variegata*, with the description of which it agrees to the minutest particular. Owing to transposition of labels it carries a Wied label belonging to a male specimen of *Myrmotherula melanogastra !*

Cabanis (Wiegm. Arch., 1874, i, p. 224) and Burmeister (Thiere Bras., III, p. 79) refer both *M. scapularis* and *M. variegata* Wied to *Herpsilochmus rufimarginatus*.

Myrmotherula gularis (*Spix*).

Myiothera cinerea Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 1093.

Am. Mus. Nat. Hist., No. 5328, ♂ ad. Interior of Brazil.

The original label of the type specimen is thus inscribed: "*Myrmotherula gularis* Sclat. *Myiothera cinerea* Wied. Brasilien, M. R. ♂." The MS. Catalogue entry is: "*Myrmotherula gularis* Spix. (*Myiothera cinerea* Wied.) Mas. Fem. *Rhopoterpe gularis* Ménétr. Brasilien (M. R.)."

Formicivora grisea (*Bodd.*).

Note.—Wied's "**Myiothera superciliaris** Licht." (Beitr. III, p. 1073) and his "**Myiothera leucophrys** Licht." (Ib., p. 1075) are both referable to *Formicivora grisea* (Bodd.), as shown by Wied's specimens still extant. These are five in number, three of which (Nos. 5341, 5347, 6862) are adult males; one (No. 5340) is a young male, with the black of the lower parts fringed with whitish and gray; the other (No. 5343) is an adult female. Nos. 5341, 5343, and 6826 have the original Wied labels, reading as follows: "*Formicivora rufatra* Lafr. & d'Orb. *Myiothera superciliaris* Licht., Wied. Brasilien, M. R.," with the respective sex marks. No. 5374, an old male in very worn plumage, with the white flank feathers nearly all lacking, is evidently the basis of his description of the male bird of *M. superciliaris*. Nos. 5343 and 5340 are also apparently the basis respectively of his descriptions of the female and young male of this species.

No. 5341 has the original Wied label inscribed as follows: "*Formicivora grisea* Bodd. *Myiothera leucophrys* Vieill.; *nigricollis* Sw.; *Ellipura* Cab. [♀] Le grisin de Cayenne Buff. Brasilien, M. R. ♂." In the MS. Catalogue he adds to the above "*Myiothera leucophrys* Wied." This is a thick-billed example of *F. grisea*, and is clearly the basis of his description of the male bird of his *M. leucophrys*, which he says agrees with the preceding species (*M. superciliaris*), except "der Schnabel ist dicker, länger und stärker."

A female *F. grisea* (A. M., No. 5331) labeled (with a Verreaux label) *Myrmotherula melanogastra*, through an evident transposition of labels (there is in the collection a female *M. melanogastra* without a label), is certainly the type of the female of Wied's *M. leucophrys*. It is also a thick-billed bird, and has the upper and lower parts as described by Wied, in contrast with the female of his *M. superciliaris*. The original label of the male type (No. 5331) of this species has the lower left-hand corner of the label cut away, evidently to remove the sex mark when the two birds were separated in removing them from the original Wied stand (see antea, p. 210).

Wied's *M. leucophrys* has heretofore been correctly referred to *F. grisea* (Bodd.), while "*M. superciliaris* Wied (nec Licht.)" has been generally *incorrectly* referred to *F. rufatra* (Lafr. & d'Orb.) =*F. rufa* (Wied).

Formicivora rufa (*Wied*).

Myiothera rufa Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 1095.
Thamnophilus rufater Lafr. & d'Orb., Syn. Av., p. 12 (Mag. de Zool., 1837).

Am. Mus. Nat. Hist., Nos. 5353 and 5354, ♀ ♀ ad. Interior of the Province of Bahia.

The original label, covering both specimens, is as follows: "*Formicivora rufa* Gray. *Myiothera rufa* Wied. ♀. Brasilien, M. R. ♀." The entry in the MS. Catalogue is: "*Formicivora rufa* Wied (*Formicivora rufa* Gray; *Ellipura* Caban.). Brasilien, M. R."

Wied's *Myiothera rufa* proves to have been based on two females of what is commonly known as *Formicivora rufatra*. As Wied's name has six years' priority over *rufatra* of Lafr. & d'Orb., it must take precedence as the name of that species.

Formicivora strigilata (*Wied*).

Myiothera strigilata Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 1064.

Am. Mus. Nat. Hist., No. 6825, ♂ ad.; No. 5359, ♀ ad. Interior of the Province of Bahia.

The original label, covering both specimens, is as follows: "*Myrmeciza strigilata* Wied. *Myiothera strigilata* Wied. ♂ ♀. Brasilien, M. R." The entry in the MS. Catalogue is the same.

Terenura maculata (*Wied*).

Myiothera maculata Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 1088.

Am. Mus. Nat. Hist., No. 5361, ♂ ad.; No. 5362, ♀ ad. Southeastern Brazil.

The original label, covering both specimens, reads: "*Formicivora maculata* Wied. *Myiothera maculata* Wied. *Therenura maculata.* ♀ ♂. Brasilien, M. R." The entry in the MS. Catalogue is: "*Formicivora maculata* Wied. (*Therenura maculata* ———.) Brasilien."

Ramphocœnus melanurus *Vieill.*

Thryothorus Gladiator Wied, Beitr. Naturg. Bras., III, ii, 1821, p. 751.

Am. Mus. Nat. Hist., No. 6830, ♂. Southeastern Brazil.

The original label is: "*Thriothorus gladiator* mihi. *Troglodytes rectirostris* Sw. ♂. Brasilia, M. R." The entry in the MS. Catalogue is: "*Thryothorus gladiator* Wied. Brasilien."

Wied described only the male, which is undoubtedly the bird here recorded.

Myrmeciza ruficauda (*Wied*).

Myiothera ruficauda Wied, Beitr. Naturg. Bras., III, ii, 1831, p. 1060.

Am. Mus. Nat. Hist., No. 6829, ♂ ad.; No. 5388, ♂ ad.; No. 5386, ♂ juv.; No. 5385, ♀ ad. Southeastern Brazil.

The original label, covering Nos. 5388 and 5385, is inscribed as follows: "*Myrmeciza ruficauda* Wied. *Myiothera* W. Brasilien. ♂ ♀. M. R." The label of Nos. 6829 and 5326 is the same. The MS. Catalogue entry is: "*Myrmeciza ruficauda* Wied (*Myiothera* Wied). 3 Exempl. mänl. 1 Ex. weibl. Brasilien—(M. R.)."

Hypocnemis myiotherina (*Spix*).

"*Myiothera ardesiaca* LICHT." WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1055.

Am. Mus. Nat. Hist., No. 6827, ♂ ad. Southeastern Brazil.

The original label reads: "*Myrmeciza ardesiaca* Wied. *Myiothera ardesiaca* Wied. Brasilien, M. R. Mas." Entered in the MS. Catalogue as: "*Myrmeciza ardesiaca* Wied. (*Myiothera* Wied; *Myrmonax* Caban.) Mas. Brasilien (M. R.)."

Although Wied ascribes the specific name to Lichtenstein, it was doubtless merely a manuscript museum name which he adopted.

Chamæza brevicauda (*Vieill.*).

Myioturdus marginatus WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1035.

Am. Mus. Nat. Hist., No. 5405, ♂ ad.; No. 5406, ♀ ad. Arrayal da Conquista, interior of the Province of Bahia.

The original label of No. 5405 reads: "*Chameza brevicauda* Vieill. *Myioturdus marginatus* Wied. Mas. Brasilien, M. R." No. 5406 carries a similar label, with the substitution of "Femina" for "Mas." The entry in the MS. Catalogue is: "*Chamaeza brevicauda* Vieill. (*Myioturdus marginatus* Wied; *Chamaeza meruloides* Vig.; *Myiothera campanisona* Licht.) Brasilia, M. R. Mas. Fem. juv."

Wied purports to describe in the "Beitrage" a female and a young female; but later seems to have regarded the type of his description as a male, judging from his labels and catalogue entry.

Grallaria ochroleuca (*Wied*).

Myioturdus ochroleucus WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1032.

Not in American Museum of Natural History.

The entry in the MS. Catalogue is: "*Chamaeza ochroleuca* Weid (*Myioturdus ochroleucus* Weid). Brasilien (M. R.). Mas."

Unfortunately Wied's type of this rare species is not now in the collection.

Conopophaga lineata (*Wied*).

Myiagrus lineatus WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1046.

Am. Mus. Nat. Hist., No. 6777, ♀ ad. Arrayal da Conquista, interior of the Province of Bahia.

The original label of the single type reads as follows: "*Conopophaga lineata* mihi. *Myiagrus lineatus* mihi. Curumanço, Brasil. ♀. Brasilia, M. R." The entry in the MS. Catalogue is: "*Conopophaga lineata* Wied. *Myiagrus lineatus* Wied. *Conopoph. vulgaris* Ménétr. Brasilien, Rio de Janeiro."

Wied says (l. c., p. 1049) that he met with this bird only once, "in der Gegend des *Arrayal da Conquista* im Sertong der Provinz *Bahia*." There is, however, another specimen (♂) in his collection labeled as from "Rio de Janeiro," and it is to this alone that the Catalogue entry seems to refer.

Corythopis calcarata (*Wied*).

Myiothera calcarata WIED, Beitr. Naturg. Bras., II, ii, 1831, p. 1101.

Am. Mus. Nat. Hist., No. 6787, ♂ ad. Southeastern Brazil.

The original label is: "*Corythopsis calcarata* Wied, Cab., Sclater. *Muscicapa* Delaland. Brasilien, M. R. ♂." The MS. Catalogue entry is: "*Corythopsis calcarata* Sundev. (*Myiothera calcarata* Wied). Mas. Fem. Brasilien (M. R.)."

Wied (l. c.) describes only the male, and says he has not had the female before him. Though both "Mas." and "Fem." are entered in the Catalogue, there is only one specimen in the collection.

Scytalopus indigoticus (*Wied*).

"*Myiothera indigotica* LICHT." WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1091.

Am. Mus. Nat. Hist., No. 5416, ♂ ad.; No. 5417, ♀ ad. Vicinity of Bahia.

The original label, covering both birds, reads as follows: "*Scitalopus indigoticus* Cab. *Myiothera indigotica* Licht. Brasilia." Not entered in the MS. Catalogue.

"*Myiothera indigotica* Licht." seems to have been merely a museum name adopted by Wied."

Merulaxis rhynolophus (*Wied*).

Myiothera rhynolopha WIED, Beitr. Naturg. Bras., III, ii, 1831, p. 1051.

Am. Mus. Nat. Hist., No. 6831, ♂ ad. Rio Belmonte.

The original label of the male, the only one of the two types now in the collection, reads as follows: "*Merulaxis rhinolophus. Myiothera rhinolopha* Wied. Mas. Brasilien, M. R." The MS. Catalogue entry is: "*Seytalophus rhinolopha* Wied (*Myiothera rhinolopha* Wied; *Malacorhynchus* Ménétr.; *Sarochalinus* Caban.). Mas. Fem. Brasilien (M. R.)."

Glaucis hirsuta (*Gm.*).

Trochilus ferrugineus WIED, Beitr. Naturg. Bras., IV, ii, 1832, p. 120.

Am. Mus. Nat. Hist., No. 5427, ♂ ad.; No. 5431, ♀ ad.; No. 5432, juv. Southeastern Brazil.

Only one of these specimens (No. 5431) carries the original Wied label, which is inscribed as follows: "*Tr. ferrugineus.* Guainumbi 4te sp. Marcgr. Brasilia, M. R." Not entered in the MS. Catalogue.

Florisuga fusca (*Vieill.*).

Trochilus ater WIED, Reise Bras., I, 1820, p, 366; Beitr. Naturg. Bras., IV, i, 1832, p. 52.

Am. Mus. Nat. Hist., Nos. 5526 and 5527, ♂ ♂ ad.; No. 5528, ♂ juv. Southeastern Brazil.

The original label of Nos. 5526 and 5527 is as follows: "*Troch.* (*Lampornis*) *atratus* Licht. ♂. Brasilia. ♂." The same for No. 5528 is: "*Tr. atratus* Licht. Brasilia. ♂ juv." The entry in the MS. Catalogue is: "*Florisuga atra* Wied. (*Troch. atratus* Licht.) Mas. Fem. juv. Brasilien (M. R.)."

Calliphlox amythystina (*Gm.*).

Trochilus campestris WIED, Beitr. Naturg. Bras., IV, i, 1832, p. 73.

Am. Mus. Nat. Hist., Nos. 5651 and 5652, juv. Campo Geral, on the boundary between the Provinces of Minas Geraës and Bahia.

The original label, covering both specimens, is as follows: "*Tr. amethystinus* avis hornet. *T. campestris* W. Brasilia, M. R." The entry in the MS. Catalogue is: "*Triphaena amethystina* Gmel. Guiana. Brasilien."

The species was based on the young birds here recorded (*cf.* Wied, l. c., p. 74).

Heliactin cornuta (*Wied*).

Trochilus cornutus WIED, Reise Bras., II, 1821, pp. 199, 344; Beitr. Naturg. Bras., IV, i, 1832, p. 99.

Trochilus bilophus TEMM., Pl. Col., 3^e livr., pl. 18, fig. 3, ♂.

Am. Mus. Nat. Hist., No. 6835, ♂ ad.; No. 6836, ♀ ad. Southeastern Brazil.

The original label, covering both specimens, is as follows: "*T. cornutus* Wied. ♀. Brasilia. ♂." The entry in the MS. Catalogue is: "*Heliactin cornutus* Wied. Mas. Fem. Brasilien (M. R.)."

Temminck's figure appears to have been based on one of Wied's specimens (*cf.* Beitr., IV, p. 103; also Reise, II, p. 344).

Petasophora serrirostris (*Vieill.*).

Trochilus petasophorus WIED, Reise Bras., II, 1821, p. 191; Beitr. Naturg. Bras., IV, i, 1832, p. 76.

Am. Mus. Nat. Hist., Nos. 6834 and 6897, ♂ ♂ ad. Minas Geraës.

The original label of the type (No. 6897) is as follows: "*Troch. petasophorus* mihi. Brasilia, Minas Geraës. ♂." The entry in the MS. Catalogue is: "*Petasophora versicolor* Vieill. (*Trochilus petasophorus* Wied.) Mas. Fem. Brasilien (M. R.)."

No. 6834 is also apparently a male, though entered in the MS. Catalogue as "Fem." Wied says (Beitr., IV, p. 79): "Den weiblichen Vogel habe ich nicht erhalten."

Eucephala cyanogenys (*Wied*).

Trochilus cyanogenys Wied, Beitr. Nat. Bras., IV, i, 1832, p. 70.

Not in American Museum of Natural History.—Entered in the MS. Catalogue as: "*Saucerottia cyanogenys* Wied. (*Ornismya Wiedii* Less.) Brasilien (M. R.)."

The types of this species seem to have long since disappeared from the collection. (*Cf.* Elliot, Synop. Trochil., 1879, p. 231.)

Lesson's figure of this species, in his "Hist. Nat. des Ois. Mouches," Suppl. pl. 26, was based on Wied's types (*cf.* Beitr., IV, p. 71).

Hylocharis sapphirina (*Gm.*).

Trochilus latirostris Wied, Beitr. Naturg. Bras., IV, i, 1832, p. 64.

Not (?) in American Museum of Natural History, and not entered in the MS. Catalogue.

There are no specimens in the Wied Collection bearing this name, nor is the name entered, even as a synonym, in his MS. Catalogue. There are, however, five Wied specimens labeled by him "*Trochilus sapphirinus*," one of which is *Hylocharis lactea*, three are *H. cyanea*, and one is *H. sapphirina*. No. 5838 (*H. sapphirina*) agrees with his description of the male bird of his *T. latirostris*, and is almost beyond question its type.

The male of Wied's *T. sapphirinus* is beyond doubt No. 5836= *Hylocharis lactea*; his female and young male *T. sapphirinus*= *H. cyanea*.

Agyrtria tephrocephala (*Vieill.*).

Trochilus vulgaris Wied, Beitr. Naturg. Bras., IV, i, 1832, p. 72.

Am. Mus. Nat. Hist., Nos. 5788 and 5790. Rio de Janeiro.

The original label, probably covering both specimens, is as follows: " *Tr. tephrocephalus* Vieill. *Tr. vulgaris* Wied. Brasilia, M. R." Not entered in the MS. Catalogue.

Thalurania glaucopis (*Gm.*).

Trochilus pileatus Wied, Reise Bras., I, 1820, p. 64 (nec Lath.).
"*Trochilus glaucopis* Gmel." Wied, Beitr. Nat. Bras., IV, i, 1832, p. 85.

There are no specimens bearing this name, nor is the name entered in the MS. Catalogue. There are, however, several Wied specimens of *T. glaucopis* in the collection.

Hemiprocne zonaris (*Shaw*).

Hirundo collaris Wied, Reise Bras., I, 1820, p. 75; II, 1821, p. 336.
"*Cypselus collaris* P. Max" Temm., Pl. Col., 33^{e} livr., pl. 195.
"*Cypselus collaris* Temm." Wied, Beitr. Nat. Bras., III, 1830, p. 344.

Am. Mus. Nat. Hist., No. 5865, ♂ ad. Rio de Janeiro.

This specimen is entered as follows in the MS. Catalogue: "*Acanthylis collaris* Wied (*torquatus* Licht.; *Hir. albicollis* Vieill.; *zonaris* Shaw). Sud America, Rio de Janeiro." The original label is inscribed: "*Cypselus collaris* Tem. Martinet blanccol, Tem. Brasilia. ♂. Rio de Janeiro, M. R."

This specimen is the basis of Temminck's pl. 195 (*cf.* Beitr., p. 347).

Note.—Wied's **Cypselus pelagius** (Reise Bras., II, 1821, p. 73; Beitr. Naturg. Bras., I, 1830, p. 347), as shown by his specimen (female, No. 5864), proves to be the *Acanthylis cinereicauda* of Cassin, described in 1850. The original label reads: " *Cypselus pelasgius* Temm. Femina. Brasilia, M. R." The specimen is not recorded in the MS. Catalogue. It was taken at Canavieras, Rio Pardo.

Wied's "? **Cypselus acutus**" (Beitr., III, p. 351) is not in the collection. Wied cites "? *Hirundo acuta*, Linn., Gmel., Lath." This species is commonly synonymized with *Chætura cinereiventris* Scl.

Nyctibius aëthereus (*Wied*).

Caprimulgus æthereus Wied, Reise Bras., I, 1820, p. 236; Beitr. Naturg. Bras., III, 1830, p. 303.

Am. Mus. Nat. Hist., No. 6837, ♂ ad.; No. 5871, ♀ ad. Rio Mucurí, Province of Bahia.

The entry in the MS. Catalogue is: "*Nyctibius aethereus* Wied (*sphenurus* Vieill.; *longicaudatus* Spix). Brasilien." No. 5871 has the following original label: "*Nyctibius aethereus* mihi. Fem. *Caprimulgus longicaudus* Spix. Brasilia orient. M. R." No. 6857 bears the same legend, except that "Fem." is replaced by "Mas."

Nyctibius leucopterus (*Wied*).

Caprimulgus leucopterus Wied, Reise Bras., II, 1821, p. 227; Beitr. Naturg. Bras., III, i, 1830, p. 311.

Am. Mus. Nat. Hist., No. 5868, ♂ ad.; No. 5867, ♀ ad. Caravellas, near Bahia.

The original labels of the types of this species read as follows: "*Nyctibius leucopterus.* Brasilia," with, respectively, the signs ♂ and ♀. The entry in the MS. Catalogue is: "*Nyctibius leucopterus* Wied. Mas. Fem. Brasilia."

Podager nacunda (*Vieill.*).

Caprimulgus diurnus Wied, Reise Bras., II, 1821, pp. 174, 344; Beitr. Naturg. Bras., III, i, 1830, p. 326.

Am. Mus. Nat. Hist., No. 6838, ♀ ad. Province of Bahia.

This bird is entered in the MS. Catalogue as follows: "*Podager nacunda* Azara (*Caprim. diurnus* Wied). Brasilien." The original label reads: "*Caprimulgus diurnus* mihi. Fem. *C. Nacunda* Vieill. Nacunda d'Azara. Brasilia, Paraguay, M. R."

Prince Wied seems to have had only the single female specimen above recorded, as he says (Beitr., p. 329) that he never had the male in hand. This specimen was taken "im Inneren der Provinz Bahia," where many of these birds were seen in the month of February.

Campephilus melanoleucus (Gm.).

"*Picus comatus* Ill." Wied, Beitr. Nat. Bras., IV, i, 1832, p. 393.

Am. Mus. Nat. Hist., No. 5913, ♂ ad. Southeastern Brazil.

There can be no doubt that this specimen is the type of Wied's *Picus comatus*, from the peculiar form of the tail, of which he says, "der Schwanz war bei meinem einzigen Exemplare nicht vollkommen ausgewachsen." The specimen has lost its original label, and the entry in the MS. Catalogue is simply "*Megapicus comatus*."

Campephilus robustus (*Wied*).

Picus robustus Wied, Reise Bras., I, 1820, p. 178; Beitr. Naturg. Bras., IV, i, 1832, p. 385.

Am. Mus. Nat. Hist., No. 5908, ♂ ad.; No. 5909, ♀ ad. Southeastern Brazil.

The original label of No. 5908 reads: "*Picus robustus* Licht. Charp. à tête rouges d'Az. ♂. Brasilia, Paraguaya, M. R.;" of No. 5909, "*Picus robustus* Licht. Brasilia, Paraguaya, M. R." The entry in the MS. Catalogue is: "*Dryacopus robustus* Licht. (*Campephilus* Gray.) Mas. Fem. Juv. Brasilien."

Leuconerpes candidus (*Otto*).

Picus melanopterus Wied, Reise Bras., I, 1820, p. 165; *ib.*, II, 1821, p. 339.

"*Picus candidus* Otto" Wied, Beitr. Nat. Bras., IV, i, 1832, p. 415.

Am. Mus. Nat. Hist., No. 5951, ♂; No. 6839, ♀. Itabapuana.

The original label of No. 5951 is: "*Picus candidus* Otto. M. R. Brasilia. Itabapuana, ♂." That of No. 6839 is: "*Picus candidus* Otto. Mas. juv. *Picus melanopterus* mihi. Brasilia, M. R." The entry in MS. Catalogue is: "*Leuconerpes dominicanus* Swains. (*Picus melanopterus* Wied; *P. candidus.*) Brasilien (M. R.)."

Note.—**Galbula magna** Wied (Reise Bras., I, 1820, p. 193), a *nomen nudum*="*Galbula viridis* Lath." Wied (Beitr., IV, i, 1832, p. 436)=*Galbula rufo-viridis* Cab.

Conurus cactorum (*Wied*).

Psittacus cactorum Wied, Reise Bras., II, 1821, pp. 168, 344; Beitr. Naturg. Bras., IV, i, 1832, p. 193.

Am. Mus. Nat. Hist., Nos. 6220, 6221, ♂ and ♀ ad.; No. 6843, ♂ juv. Province of Bahia.

The original labels covering these specimens are variously inscribed as follows: No. 6220, "*Conurus cactorum* Wied. Brasilien." No. 6221, "*Conurus cactorum* W.? *Conurus Petzii* Leibl. Mexico (Verreaux). Mas." No. 6843, "*Psitt.* (*Conurus*) *cactorum* mihi. Mas. juv. *Aratinga flaviventer* Spix. Brasilien, M. R." The entry in the MS. Catalogue is: "*Conurus cactorum* Wied; Souancé, Schleg. (*Aratinga flaviventer* Spix.) Mas. Fem. (¹). Brasilien (M. R.)." In a foot-note he adds: "(¹) *Conurus Petzii* Leibl. scheint ganz identish mit *cactorum* sein, bei Vergleichung finde ich keine unterschied."

No. 6221 is not, of course, a type, but was apparently received from Verreaux, as an example of *C. petzi* from Mexico! It was probably a comparison of this specimen, erroneously labeled as *petzi* from Mexico, that gave rise to the above-transcribed footnote from the MS. Catalogue.

Conurus cruentatus (*Wied*).

Psittacus cruentatus Wied, Reise Bras., I; 1820, p. 72; Beitr. Naturg. Bras., IV, i, 1832, p. 183.

Not in American Museum of Natural History.—Entered in the MS. Catalogue as "*Conurus cruentatus* Wied, Gray, Schleg. (*Psitt. erythrogaster* Licht. (*Conurus*) *squamosus* Kuhl; *Aratinga cyanogularis* Spix; *Psittacula Lichtensteinii* Vigr.; *Psitt. Vigorsii* Desm.; *Psittac. tiriba* Less. Tiriba grande der Brasiliener.) Mas. Fem. Juv. Brasilien im Süden (M. R.)."

These specimens are not now in the collection, the only mounted example of *C. cruentatus* being a Verreaux bird.

Conurus melanurus (*Spix*).

Conurus speculatus Wied, MS.

Am. Mus. Nat. Hist., No. 6842. Amazonia.

The original label reads: "*Conurus speculatus* Wied. *Conurus melanurus* Spix. Brasilien, Rio das Amazonas." The MS. Catalogue entry is: "*Conurus melanurus* Spix (*Aratinga melanurus* Spix; *Conurus speculatus* Wied). Amazonen Land, Brasilien."

The "*Conurus speculatus* Wied" is apparently only a manuscript name; at least I fail to find it anywhere cited.

Amazona vinacea (*Wied*).

Psittacus vinaceus Wied, Reise Bras., II, 1821, p. 198; Beitr. Naturg. Bras., IV, i, 1832, p. 220.

Am. Mus. Nat. Hist., No. 6261, ♂ ad.; No. 6845, ♀ ad. Interior of the Province of Bahia.

The original label of No. 6261 reads: "*Amazona vinacea* W., Schleg. *Psitt. columbinus* Spix. Mas. Brasilien (M. R.)." The label of No. 6845 is the same, substituting "Femina" for "Mas." The entry in the MS. Catalogue is: "*Amazona vinacea* Wied, Schleg. (*Psittacus columbinus* Spix; *Psitt. tarba* Kuhl). Brasilien, Sertong von Bahia (M. R.). Mas. Fem."

Triclaria cyanogastra (*Wied*).

Psittacus cyanogaster Wied, Reise Bras., I, 1820, p. 263; Beitr. Naturg. Bras., IV, i, 1832, p. 202.

Am. Mus. Nat. Hist., No. 6277, ♂ ad.; No. 6846, ♀ ad.; No. 6779, juv. Cabo Frio.

Nos. 6777 and 6779 were originally labeled "*Psittatus cyanogaster* mihi. ♂. Brasilia, M. R. Juv." No. 6846 is labeled "*Psitt. cyanogaster* mihi., Vieill. *Triclaria* Wagl. Sabiasikka Br. Brasilia, M. R." The MS. Catalogue entry is: "*Triclaria cyanogastra* Vieill. (*Amazona cyanogastra* Schleg.; *Psittacus cyanogaster* Wied; *Triclaria cyanogastra* Wagl.). Südliches Brasilien (Cabo Fria; M. R.).

Urochroma wiedi.

Psittacus melanonotus Wied, Reise Bras., I, 1820, p. 275; Beitr. Naturg. Bras., IV, i, 1832, p. 256 (nec Shaw=*Psittacus erythropterus* Gmel.).

"*Psittacus melanonotus* Licht." Kuhl, Consp. Psittac. (Nova Actæ Acad. Cæs. Leop.-Carol. Nat. Cur., X, i), 1820, p. 59 (nec Shaw).

Urochroma wiedi Allen, MS.

Am. Mus. Nat. Hist., No. 6302. Southeastern Brazil.

The single specimen now in the collection has the following original label: "*Psittacula melanota* Licht. Schleg. Brasilien (M. R.) Mas. Juv." The entry in the MS. Catalogue is: "*Psittacula melanota* Licht. (*Psitt. melanotus* Licht.; *Ps. erythrurus* Wied). Mas. Fem. Juv. Brasilien (M. R.)."

Wied's name *Psittacus melanonotus* (ex Lichtenstein, MS.) is antedated many years by a *Psittacus melanonotus* of Shaw (=*Psittacus erythropterus* Gmelin, *apud* Finsch, Die Papag., II, p. 262). It is consequently necessary to rename the species, as above.

Pionopsitta mitrata (*Wied*).

Psittacus mitratus Wied, Reise Bras., I, 1820, p. 262; Beitr. Naturg. Bras., IV, i, 1832. p. 247.

Am. Mus. Nat. Hist., No. 6316, ♂ ad.; No. 6317, ♂ jun. Eastern Brazil.

The label originally covering Nos. 6316 and 6317 is as follows: "*Psittacula pileata* Sc. Schl. *Psittacus mitratus* Wied. Brasilien (M R.). Mas. Juv. Mas."

The entry in the MS. Catalogue is: "*Psittacula pileata* Scop. (*Psittacus* Scop.; le Maracana á tête rouge Azara; *Ps. erythrocephalus* Vieill.; *Ps. mitratus* Wied; Maitaca de cabeça vermelha der Brasiliener der Ostküste). Mas. Fem. Juv. Brasilien—(M. R.)."

Finsch regards the *Psittacus pileatus* of Scopoli, by some writers considered as referable to this species, unidentifiable, and adopts Wied's designation for it.

Syrnium perspicillatum (*Lath.*).

Strix pulsatris Wied, Reise Bras., I, 1820, p. 366.

Strix (*Syrnium*) *pulsatrix* Wied, Beitr. Naturg. Bras., III, i, 1830, p. 268.

Am. Mus. Nat. Hist., No. 6335, ♂ ad. Rio Mucurí.

Wied (Beiträge, l. c.) describes only the male, and says the female was to him unknown. The type bears the following original label: "*Strix pulsatrix.* Mas. Brasilia, M. R." The entry in the MS. Catalogue is "*Ulula pulsatrix* Wied. Brasilien."

Glaucidium ferox ferrugineum (*Wied*).

Strix ferrugineum Wied, Reise Bras., I, 1820, p. 105.
Strix (*Glaucidium*) *ferruginea* Wied, Beitr. Naturg. Bras., III, i, 1830, p. 234.

Am. Mus. Nat. Hist., No. 6895, ♂ ad.; No. 6343, ♀ ad. Southeastern Brazil.

The original label of No. 6895 is: "*Strix ferruginea.* Mas. Chouette rousserolle Temm. Brasilia, M. R." That of No. 6343 is the same, substituting "fem." for "mas." The entry in the MS. Catalogue is: "*Glaucidium ferrugineum* Wied. Mas. Fem. Brasilien."

These specimens have been identified by Mr. Ridgway as "*Glaucidium phalænoides* (Rufous phase)." They are evidently not his *G. ferrugineum* (Proc. Boston Soc. Nat. Hist., 1873, pp. 93, 100); although his first reference under this name is, "*Strix ferruginea* Max., Reis. Bras., I, 105." They, however, agree with the rufous phase of Sharpe's *G. ferox* (Vieill.), who (Cat. Bds. Brit. Mus., II, p. 200), under "*b.* Rufous phase," gives "*Strix ferruginea* Max." as the first reference.

Glaucidium pumilum (*Temm.*).

Strix (*Glaucidium*) *minutissima* Wied, Beitr. Naturg. Bras., III, i, 1830, p. 242.

Am. Mus. Nat. Hist., No. 6345, ♂ ad.; No. 6345 *bis*, ♀ ad. Province of Bahia.

The original label, covering both specimens, is as follows: "*Strix minutissima.* Chouette-Cabouré Temm. ♂ ♀. Brasilia, M. R." The MS. Catalogue entry is: "*Glaucidium minutissimum* Wied. Mas. Fem. Brasilien."

Circus maculosus (*Vieill.*).

Falco palustris Wied, Reise Bras, I, 1820, p. 110; Beitr. Naturg. Bras., III, ii, 1830, p. 224.

Am. Mus. Nat. Hist., No. 6841, ♂ juv. Rio Itabapuana.

The original label is: "*Falco gularis* Cuv. Mas. juv. *Falco palustris* mihi. Brasilia, M. R." The MS. Catalogue entry is: "*Circus macropterus* (et *albicollis* Vieill., Azara; *Falco palustris* Wied). Mas. Fem. Brasilien (M. R.)."

Buteo brachyurus (*Vieill.*).

Falco albifrons Wied, Beitr. Naturg. Bras., III, i, 1830, p. 187.

Am. Mus. Nat. Hist., No. 6356, ♀ ad. Eastern Brazil.

This is the single specimen described as above, of which the following is a transcript of the original label: "*Buteo albifrons* Schl. Wied. *Falco albifrons* Wied. *Asturina albifrons* Kaup. Femina. Brasilien (M. R.)." The entry in the MS. Catalogue is: "*Cymindis albifrons* Wied. Brasilia (M. R.)."

Urubitinga lacernulata (*Temm.*).

Falco skotopterus Wied, Beitr. Naturg. Bras., III, i, 1830, p. 204.

Am. Mus. Nat. Hist., No. 6370, ♂ ad. Esperito Santo.

The original label reads: "*Asturina scotoptera* Schl. *Falco scotopterus* Wied. *Falco lacernulata* Temm. Mas. Brasilien (M. R.)." The entry in the MS. Catalogue is: "*Leucopternus lacernulatus* Temm. (*Falco scotopterus* Wied). Mas. Fem. Brasilien." Only the male appears to be now extant.

Spizaëtus tyrannus (*Wied*).

Falco tyrannus Wied, Reise Bras., I, 1820, p. 360; Beitr. Naturg. Bras., III, i, 1830, p. 84.

Am. Mus. Nat. Hist., No. 6381, ♂ ad. Rio Belmonte.

The original label of this specimen has been lost. The entry in the MS. Catalogue is: "*Spizaëtus tyrannus* Wied (*Spiz. braccatus* O. DesMurs.). Brasilia, M. R."

Accipiter pileatus (*Wied*).

"*Falco pileatus* P. Max." Temm., Pl. Col. 35ᵉ livr., "1824," pl. 205; Wied, Beitr. Naturg. Bras., III, i, 1830, p. 107.

Am. Mus. Nat. Hist., No. 6386, ♂ ad. Near mouth of the Rio Belmonte.

The original label reads: "*Falco pileatus* mihi. Fem. Autour chaperonne Tem. Brasilia, M. R." The MS. Catalogue entry is: "*Accipter pileatus* Wied. (*F. beskii* Licht.) Mas. Fem. Brasilia (M. R.)."—Only one of the specimens is now in the collection.

Wied's name was first published by Temminck, who says (l. c.): "On doit la connaissance de cette espèce au prince de Neuwied, qui l'a raportée de ses voyages au Brésil."

Wied sent, prior to the publication of the "Reise" or "Beiträge," specimens of many of his unpublished species to Temminck, to be figured in the "Nouveau Recueil de Planches coloriées d'Oiseaux." They appear to have been accompanied with manuscript names, many of which were adopted by Temminck and credited to Wied. In other cases new names were given by Temminck. A number of the species first published by Wied (a few in the "Reise," but mostly in the "Beiträge") were figured and published some years earlier by Temminck.

Gampsonyx swainsoni *Vigors.*

Falco rufifrons WIED, Beitr. Naturg. Bras., III, i, 1830, p. 123.

Not in American Museum of Natural History.

In the MS. Catalogue is entered "G[enu]s.... *Gampsonyx* Vig.," with no reference to any species or specimens. In the "Beiträge" he says (p. 125) he had met with only the one specimen there described, which appears not to have been preserved.

Leptodon cayennensis (*Gm.*).

"*Falco palliatus* P. MAX." TEMM., Pl. Col., 35^e livr., "1823," pl. 204; WIED, Beitr. Naturg. Bras., III, i, 1830, p. 148.

Not in the collection.—The following entry occurs in the MS. Catalogue: "*Cymindis cayennensis* Gmel. (*Falco palliatus* Wied; *Asturina cyanopus* Vieill.). Fem. Brasilien (M. R.)."

In the "Beiträge" (III, p. 152) he speaks of having obtained only a single specimen, a female—"In dengrossen Urwäldern am Flusse *Peruhype* unweit *Vill Viçoza.*" From this specimen he says Temminck made his "*Tab.* 204."

Whether the type specimen was in the Maximilian Collection when it was received at the American Museum can not now be determined.

Leptodon unicinctus (*Temm.*).

Falco vitticaudus WIED, Beitr. Naturg. Bras., III, i, 1830, p. 178.

"*Falco unicinctus* ILLIG." TEMM., Pl. Col., 18^e livr., "1824," pll. 103, 104, 115.

Am. Mus. Nat. Hist., No. 6362, ♀ juv. Southeastern Brazil.

The original label of this specimen is as follows: "*Cymindis unicinctus* Cuv. *Falco unicinctus* Illig. Femina juv. Brasilien (M. R., 1815)." The entry in the MS. Catalogue is: "*Cymindis unicinctus* Ill. (*F. vitticaudus* Wied, juv. *C. cuculloides* Swains.). Brasilia (M. R.)."

This is unquestionably the female bird described in the "Beiträge," which he compares with Temminck's pl. 103.

Dendrocygna fulva (*Gm.*).

Anas virgata Wied, Reise Bras., I, 1820, p. 322.
"*Anas fulva* Linn." Wied, Beitr. Naturg. Bras., IV, ii, 1833, p. 918.

Am. Mus. Nat. Hist., No. 6855, ♂ ad.; No. 6675, ♀ ad. Rio Belmonte.

The original label of No. 6855 is thus inscribed: "*Anas fulva* Linn. Quapach-canauhtli Hern. *Anas virgata* mihi. Mareca brasilien ♂. Mexico, Brasilia, M. R." The original label of No. 6675 is: "*Dendrocygna fulva* Sw., Linn. *Anas virgata* Wied. Fem. Brasilien." The entry in the MS. Catalogue is: "*Dendrocy*[*g*]*na fulva* Linn. (*A. virgata* Wied.) Mas. Fem. Brasilien (M. R.)."

Anas erythrophthalma (*Wied*).

Anas erythrophthalma Wied, Beitr. Naturg. Bras., IV, ii, 1833, p. 929.

Am. Mus. Nat. Hist., No. 6854, ♂ ad.; No. 6853, ♀ ad. Lagoa do Braço, near Villa de Belmonte.

The original label of No. 6854 is lacking; that of No. 6853 is as follows: "*Anas erythrophthalma* mihi. Femina. Brasilia, M. R." The entry in the MS. Catalogue is: "*Anas erythrophthalmas* [sic] Wied. Mas. Fem. Brasilien (Belmonte), M. R."

The Wied types of this species are still unique, so far as known to me. It is a true *Anas*, and hence only distantly related to *Metopiana peposaca* (Vieill.), to which Mr. Salvin was at one time inclined (Ibis, 1874, p. 319) to consider it "allied," "if not identical with" it, from an examination of the female type. 1889.]

There is some general resemblance in coloration between the females of these two species.

The male, taken in November, lacks, as stated by Wied, nearly all the wing-coverts and quills, owing to its being taken during the season of moult. Otherwise the bird is in fair plumage.

Columba gymnophthalma *Temm.*

Columba leucoptera WIED, Reise Bras., II, 1821, p. 242 (nec LINN.).

"*Columba poeciloptera* VIEILL." WIED, Beitr. Naturg. Bras., IV, ii, 1833, p. 459.

From Wied's account of this species it is evident that no specimens were preserved. It is generally synonymized with *C. gymnophthalma*, and Wied himself expresses the opinion (l. c., p. 461) that it might be the young of that species.

Columba locutrix *Wied.*

Columba locutrix WIED, Reise Bras., II, 1821, p. 118; Beitr. Naturg. Bras., IV, ii, 1833, p. 455.

Am. Mus. Nat. Hist., No. 6442, ♂. Ilhéos.

The original label reads: "*Columba locutrix* Wied. Mas. Brasilia, Ilhéos." The entry in the MS. Catalogue is: "*Chloraenas locutrix* Wied. (*Columba* Vieill.; *Macropygia infuscata* Reich.) Brasilia (M. R.)."

This species has commonly been referred to *Columba plumbea* (Vieill.). The so-called *C. plumbea* group evidently covers quite a range of forms, as shown by the few specimens before me from various parts of Brazil. How much of the variation is due to age, sex or season, and how much to habitat, can not now be determined, owing to the lack of proper material. Besides, Vieillot's original description is too vague and brief to indicate the real character of the bird named *C. plumbea*. It thus seems best for the present to let the species stand under Wied's name.

Pipile jacutinga (*Spix*).

Penelope leucoptera WIED, Beitr. Naturg. Bras., IV, ii, 1833, p. 544.

Am. Mus. Nat. Hist., Nos. 6393 and 6394. Eastern Brazil.

No. 6393 is labeled : "*Penelope pipile* Jacq. Femina. *Penelope leucoptera* Wied. Jacutinga brasiliens. Brasilia, M. R." No. 6394 is labeled the same, omitting "*Penelope leucoptera* Wied." The entry in the MS. Catalogue is : "*Penelope pipile* Jacq. (*Penel. leucolophus* Merr.; *P. leucoptera* Wied; Jacutinga brasiliensibus.) Mas. Fem. Brasilien (M. R.)."

Porzana viridis (*Müll.*).

Gallinula pileata Wied, Beitr. Nat. Bras., IV, ii, 1833, p. 802.
Porzana cayennensis auct.

Am. Mus. Nat. Hist., Nos. 6594, 6595. Espirito Santo.

No. 6595 bears the following original label : "*Porzana pileata* Wied. Brazilia." The label is lacking from No. 6594. The entry in the MS. Catalogue is the same.

Ægialitis semipalmata (*Bon.*).

Charadrius brevirostris Wied, Beitr. Nat. Bras., IV, ii, 1833, p. 769.

Not in American Museum of Natural History.—Entered in the MS. Catalogue as follows : "*Charadrius brevirostris* Wied. Brazilien (M. R.)."

The description of this species agrees well with the winter phase of *Æ. semipalmata.*

Note.—**Charadrius flavirostris** Wied (Beitr., IV, ii, 1833, p. 772) was described from memory, the specimens not having been preserved. The few characters given fail to render the species recognizable.

Wied's **Hæmatopus brasiliensis** (Reise, I, pp. 105, 173 ; II, p. 338—a *nomen nudum*)=*H. palliatus* Temm.

Totanus melanóleucus (*Gm.*).

Totanus maculatus Wied, Beitr. Nat. Bras., IV, ii, 1833, p. 727.

Am. Mus. Nat. Hist., No. 6849. Villa Viçosa.

The single type of this species bears the following original label : "*Totanus maculatus* Wied. Brasilia." The entry in the MS. Catalogue is the same, with the addition of "M. R."

Numenius hudsonicus *Lath.*

Numenius brasiliensis WIED, Beitr. Nat. Bras., IV, ii, 1833, p. 708.

Am. Mus. Nat. Hist., No. 6848, ♀. Southeastern Brazil.

The single type of this species bears the following original label: "*Numenius melanopus* Vieill. *Numenius brasiliensis* Wied. Brasilia. Fem." The entry in the MS. Catalogue is the same, adding "M. R."

Sterna maxima (*Bodd.*).

Sterna erythrorhynchos WIED, Beitr. Nat. Bras., IV, ii, 1833, p. 857.

Am. Mus. Nat. Hist., No. 6852, ♂ ad. Rio Parahyba.

The original label is as follows: "*Sterna erythrorhyncha* Wied. ? *Sterna hirundinacea* Cuv., Less. Mas. Brasilia." The entry in the MS. Catalogue is: "*Sterna erythrocephalus* [sic—slip for *erythrorhynchos*] Wied. (*St. caspia americana.*) Brasilien (M. R.)."

Sterna superciliaris (*Vieill.*).

Sterna argentea WIED, Reise Bras., I, 1820, p. 67; Beitr. Naturg. Bras., IV, ii, 1833, p. 871.

Am. Mus. Nat. Hist., No. 6850, ♂ ad. Rio Parahyba.

The original label reads: "*Sterna argentea* Wied. Mas. Brasilia." The MS. Catalogue entry is: "*Sterna argentea* Wied. (*St. minuta brasiliensis. St. minuta* Wils.) Nord America, Brasilien (M. R.). Mas. Fem."

NOTE.—Wied's **Sterna flavirostris** (Reise, I, p. 322—a *nomen nudum*) = *Sterna* (*Phæthusa*) *magnirostris* Licht.

Crypturus noctivagans (*Wied*).

Tinamus noctivagans WIED, Reise Bras., I, 1820, p. 160; Beitr. Naturg. Bras., IV, ii, 1833, p. 504.

Am. Mus. Nat. Hist., No. 6740, ♂ ad. Southeastern Brazil.

The original label of the only specimen now in the collection is as follows: "*Tinamus noctivagans* Wied. Mas. Brasilia." The entry in the MS. Catalogue is: "*Tinamus noctivagans* Wied. (Pezus Zabélé Spix.) Brasilien (M. R.)."

CONCORDANCE AND INDEX.

For convenience of reference the following concordance is presented, giving, in the first column, the names of Wied's species in the order in which they stand in his "Beiträge," with a reference to the volume and page of the "Reise" or "Beiträge" where they were first described. In the second column is given the equivalent name under which they are treated in the present paper, the figures at the extreme left referring to the page where the species is considered.

A single asterisk (*) prefixed to a Wied name indicates that the types are not in the American Museum of Natural History; a double-asterisk (**) thus prefixed indicates that no types were preserved.

The number of species described by Wied as new, or to which he gave new names, is 164; of 138 of these the types are still extant, while of five of the remainder no specimens appear to have been preserved, or to have been lost before the "Beiträge" was published. About 96 per cent. of Wied's species prove to be valid, but only about 70 of them still retain his specific names, owing to their prior description by other authors, as already noticed (see antea, p. 211). Wied, in many instances, adopted manuscript names from the Berlin Museum, which he credited sometimes (in the "Reise") to the Zoölogical Museum of Berlin, or to "Naturforchern zu Berlin," or directly (when occurring in the "Beiträge") to Illiger or Lichtenstein. In other cases (particularly in the "Reise") he adds, after a new name of his own, a different name as that of the species in the Berlin Museum. It is thus sometimes difficult to determine whether a name credited by Wied to Illiger or Lichtenstein had or had not been previously published; but in respect to this point much care has been exercised in the preparation of the preceding pages. In accordance with the custom of his times, Wied was a lax observer of the "*Lex prioritatis.*"

Falco tyrannus	R. I, 360	=Spizaëtus tyrannus	267
" pileatus	B. III, 107	=Accipiter pileatus	267
* " rufifrons	B. III, 123	=Gampsonyx swainsoni	268
* " palliatus	B. III, 148	=Leptodon cayennensis	268
" vitticaudus	B. III, 178	= " uncinatus	268
" albifrons	B. III, 187	=Buteo brachyurus	267
" skotopterus	B. III, 204	=Leucopternis lacernulata	267
" palustris	R. I, 110	=Circus maculosus	266

Strix ferruginea............R. I, 105=Glaucidium ferox ferrugineum. 266
“ minutissima..... ....B. III, 242= “ pumulum.......... 266
“ pulsatrix..............R. I, 366=Syrnium perspicillatum........ 265
Caprimulgus æthereus.......R. I, 236=Nyctibius æthereus....... ... 260
“ leucopterus....R. II, 227= “ leucopterus...... .. 261
“ diurnus........R. II, 174=Podager nacunda............ 261
Cypselus collaris......... .. R. I, 75=Hemiprocne collaris...... ... 260
** Hirundo pascuum.......B. III, 360=? Progne tapera.............. 216
* “ jugularis........R. I, 345=Stelgidopteryx ruficollis †...... 217
“ minuta..........R. II, 336=Atticora cyanoleuca........... 216
“ melanoleuca.....R. I, 345= “ melanoleuca.......... 216
Procnias cyanotropus........R. I, 187=Procnias ventralis............ 218
Ampelis atropurpurea...... R. I. 262=Xipholena atropurpurea....... 241
“ melanocephala......R. I, 168=Ampelion melanocephalus..... 241
Pipra strigilata.............R. I, 187=Machæropterus strigilatus..... 236
* Tanagra cyanomelas.....B. III, 453=Tanagrella cyanomelas........ 218
“ rubricollis..... B. III, 456=Calliste festiva. 219
“ elegans.. .. ..R. I, 187=Calliste cyanoventris.......... 219
“ palmarum.......R. II, 76=Tanagra palmarum........... 219
“ flammiceps..... B, III, 407=Phœnicothraupis rubica....... 220
“ capistrata.......R. II, 179=Schistochlamys capistratus..... 222
“ superciliaris.....B. III, 518=Saltator similis............... 221
“ auricapilla.......R. II, 212=Trichothraupis quadricolor.... 220
“ caerulescens ...B. III, 541=Porphyrospiza cærulescens.... 225
* Fringilla crassirostris.....B. III, 564=Orizoborus maximiliani....... 222
* “ atricapilla.......B. III, 569=Sporophila cucullata.......... 224
* “ leucopogon.....B. III, 572=Sporophila cærulescens........ 223
* “ melanocephala..B. III, 577= “ gutturalis......... 223
* “ plumbea..... .. B. III, 579= “ plumbea.......... 223
* “ rufirostris.......B. III, 581= “ hypoleuca......... 223
“ pyrrhomelas ...B. III, 586= “ nigroaurantia...... 222
* “ minuta....... B. III, 591= “ sp. incog...... ... 224
“ pileata. .... R. II, 160=Coryphospingus pileatus,..... 225
“ ornata....... ..R. II, 191=Tiaris ornata................ 225
* “ fuliginosa... .. B. III, 628=Phonipara fuliginosa.... 224
** Anthus poecilopterus .. B. III, 633=Anthus, sp. incog 214
Turdus ferrugineus........B. III, 649=Turdus fumigatus 212
Opetiorhynchus ruficaudus..B. III, 671=Furnarius albogularis.... ... 242
“ turdinus,...R. II, 148=Campylorhynchus variegatus... 213
“ rectirostris..R. II, 191=Automolus rectirostris........ 246
Synallaxis cinereus.... .. B. III, 685=Synallaxis ruficapilla......... 243
“ pallidus.. ......B. III, 690= “ pallida............ 244
“ caudacutus......B. III, 692= “ cinnamomea....... 244
* “ torquatus.. .....B. III, 697= “ torquata........ .. 244
Sylvia speciosa........ ...B. III, 708=Dacnis speciosa....... 217
“ leucogastra.........B. III, 710=Polioptila leucogastra......... 213
“ caerulescens ....B. III, 713=Dacnis plumbea. 218
* “ flaveola............B. III, 719=Hylophilus flaveolus.......... 215
Hylophilus cinerascens ...B. III, 723=Ornithion cinerascens......... 231
“ ruficeps.... ...B. III, 725=Nemosia ruficapilla. 221
* “ caeruleus.....B. III, 731 } =Nemosia pileata.............. 220
* “ cyanoleuca...B. III, 734 }

---

† At page 217, lines 21 and 22, dele the following: "indicating that there was probably a specimen bearing this name when it was in Verreaux's hands." It should be explained that it was merely the MS. Catalogue of Wied's collection which was in Verreaux's hands, and not the collection itself. These Verreaux annotations in pencil are quite frequent throughout the Catalogue, and merely indicate Verreaux's opinion as to what should be the correct name of the species thus annotated. For this information I am indebted to Mr. D. G. Elliot, who was out of town and could not be reconsulted when p. 217 was prepared and printed.

Thryothorus platensis.. ...B. III, 742=Troglodytes musculus....... 214
" Gladiator......B. III, 751=Ramphocænus melanurus...... 254
Muscicapa rivularis.........R. II, 103=Basileuterus stragulatus....... 215
" chrysochloris....B. III, 793=Sisopygis icterophrys. 227
" brevirostris.....B. III, 799=Elænea pagana............... 232
" virescens..... .B. III, 802=Heteropelma virescens........ 237
" vociferans........R. I, 242=Lathria vociferans............ 239
" sibilatrix.......B. III, 810=Aulia hypopyrrha............ 239
* " squamata.......B. III, 814=Ptilochoris squamata.......... 240
" turdina.... ....B. III, 817=Heteropelma turdinum........ 236
" caesia..........B. III, 826=Thamnomanes cæsius...... ... 250
" aurifrons......B. III, 829 }
" brevipes......B. III, 831 } =Neopelma aurifrons.......... 239
" Miles..........B. III, 850=Machetornis rixosa.......... 228
" rustica ....B. III, 866=Lipaugus simplex............ 240
" uropygiata......B. III, 868=Attila brasiliensis............ 241
" trivirgirta ......B. III, 871=Conopias trivirgata........... 234
Muscipeta Asilus..........B. III, 895=Phyllomias brevirostris........ 231
" incanescens.....B. III, 898= " incanescens....... 231
" strigilata ....B. III, 900=Pyrocephalus rubineus, ♀.. ... 235
" fuscata ...... .B. III, 902=Empidochanes fuscatus..... 235
" splendens ......B. III, 906=Pachyrhamphus niger polychropterus 238
" marginata......B. III, 909=Pachyrhamphus atricapillus.... 238
" aurantia........B. III, 911= " rufus......... 239
" citrina ....B. III, 917=Legatus albicollis 233
" ruficauda.......B. III, 920=Empidonomus varius......... 236
* " modesta....... B. III, 923=? Elænea pagana............. 232
" flaviventris......B. III, 929=Rhynchocyclus flaviventris... 233
* " platyrhyncha....B. III, 932=? Rhyncocyclus, sp. incog.... 234
* " mastacalis ......R. II, 151=Myiobius barbatus†......... 275
Euscarthmus meloryphus...B. III, 947=Hapalocercus meloryphus..... 230
" nidipendulus..B. III, 950=Euscarthmus nidipendulus.... 229
" superciliaris.. B. III, 953=Habrura superciliaris......... 230
" cinereicollis...B. III, 955=Orchilus auricularis........... 229
" orbitatus..... B. III, 958=Euscarthmus orbitatus........ 229
Todus poliocephalus.......B. III, 964=Todirostrum poliocephalum... 228
Platyrhynchus nuchalis... B. III, 971=Rhynchocyclas olivaceus 233
" leucoryphus.B. III, 974=Platyrhynchus rostratus....... 228
" rupestris.....R. I, 345=Hirundinea bellicosa........ 234
Thamnophilus scalaris.....B. III, 999=Thamnophilus ruficapillus..... 249
" cristatus...B. III, 1002= " cristatus....... 249
" nigricans ..B. III, 1006= " ambiguus...... 248
* Myioturdus ochroleucus..B. III, 1032=Grallaria ochroleuca.......... 256
" marginatus..B. III, 1035=Chameza brevicauda.......... 255
Myiagrus lineatus... ....B. III, 1046=Conopophaga lineata.... 256
Myiothera rhynolopha.....B. III, 1051=Merulaxis rhynolophus........ 257
" ardesiaca......B. III, 1055=Hypocnemis myiotherina...... 255
" ruficauda .. ..B. III, 1060=Myrmeciza ruficauda......... 254
" strigilata ......B. III, 1064=Formicivora strigilata......... 254
" leucophrys.....B. III, 1075= " grisea............ 252
" plumbea ......B. III, 1080=Dysithamnus plumbeus....... 250
" scapularis....B. III, 1083 }
" variegata ....B. III, 1086 } =Herpsilochmus rufimarginata.. 251
" maculata......B. III, 1088=Terenura maculata 254

---

† Wied's **Muscicapa mastacalis** (Reise, II, p. 151) appears to be referable to *Myiobius barbatus* (Gm.), of which we have three Wied specimens. It is thus identified by Wied in the "Beiträge" (III, ii, p. 934). The species was overlooked in the proper connection.

Myiothera indigotica	B. III, 1091	=Scytalopus indigoticus	257
" cinerea	B. III, 1093	=Myrmotherula gularis	252
" rufa	B. III, 1095	=Formicivora rufa	253
" poliocephala	B. III, 1098	=Dysithamnus mentalis	250
" calcarata	B. III, 1101	=Corythopis calcarata	256
Tinactor fuscus	B. III, 1106	=Sclerurus fuscus	242
		= " umbretta	243
* Dendrocolaptes rufus	B. III, 1130	=Picolaptes bivittatus	248
Sittasomus olivaceus	B. III, 1146	=Sittasomus erythacus	247
Glyphorhynchus ruficaudus	B. III, 1150	=Glyphorhynchus cuneatus	248
Anabates ferruginolentus	B. III, 1166	=Automolus ferruginolentus	246
" leucophthalmus	R. II, 141	= " leucophthalmus	246
" erythrophthalmus	R. II, 147	=Thripophaga erythrophthalma	245
" macrourus	R. II, 147	= " macroura	245
" atricapillus	R. II, 147	=Philydor atricapillus	247
" rufifrons	R. II, 177	=Phacellodomus rufifrons	244
Oriolus violaceus	R. I, 53	=Molothrus bonariensis	226
Icterus atro-olivaceus	B. III, 1216	=Agelaius cyanopus	226
** ? Cassicus leucurus	B. III, 1245	=	226
Corvus cyanopogon	R. II, 137	=Cyanocorax cyanopogon	227
" cyanoleucus	R. II, 190	= " cyanoleucus	227
Trochilus ater	R. I, 366	=Florisuga fusca	257
" latirostris	B. IV, 64	=Hylocharis sapphirina	259
* " pileatus	R. I, 64	=Thalurania glaucopis	260
* " cyanogenys	B. IV, 70	=Eucephala cyanogenys	259
" vulgaris	B. IV, 72	=Agyrtria tephrocephala	260
" campestris	B. IV, 74	=Calliphlox amythistina	258
" petasophorus	R. II, 191	=Petasophora serrirostris	258
" cornutus	R. II, 190	=Heliactin cornuta	258
" ferrugineus	R. II, 341	=Glaucis hirsuta	257
*Psittacus cruentatus	R. I, 53	=Conurus cruentatus	263
" cactorum	R. II, 168	= " cactorum	263
" cyanogaster	R. I, 263	=Triclaria cyanogastra	264
" vinaceus	R. II, 198	=Amazona vinacea	264
" mitratus	R. I, 263	=Pionopsitta mitrata	265
" melanonotus	R. I, 275	=Urochroma wiedi	264
Picus robustus	R. I, 72	=Campephilus robustus	262
" comatus	B. IV, 393	= " melanoleucus	262
" melanopterus	R. I, 165	=Leuconerpes candidus	262
* Columba leucoptera	R. II, 242	=Columba gymnophthalma	270
" locutrix	R. II, 118	= " locutrix	270
Tinamus noctivagans	R. I, 160	=Crypturus noctivagans	272
Penelope leucoptera	B. IV, 544	=Pipile jacutinga	270
Numenius brasiliensis	B. IV, 708	=Numenius hudsonicus	272
Totanus maculatus	B. IV, 727	=Totanus melanoleucus	271
* Charadrius brevirostris	B. IV, 769	=Ægialitis semipalmata	271
** " flavirostris	B. IV, 772	= " sp. incog	271
Gallinula pileata	B. IV, 802	=Porzana viridis	271
Sterna erythrorhynchos	B. IV, 857	=Sterna maxima	272
" argentea	R. I, 67	= " superciliaris	272
Anas virgata	R. I, 322	=Dendrocygna fulva	269
" erythrophthalma	B. IV, 929	=Anas erythophthalma	269

ARTICLE XX.—*Description of supposed New Species and Subspecies of Mammals, from Arizona.* By EDGAR A. MEARNS, Assistant Surgeon, U. S. A.

Sciurus hudsonius mogollonensis, subsp. nov.

(MOGOLLON CHICKAREE.)

Types, No. 2300,* ♂ ad., Quaking Asp Settlement, summit of Mogollon Mountains, Central Arizona, May 25, 1887; No. 2996, ♀ ad., from near General Springs, Mogollon Mountains, Arizona. Collected by Dr. Edgar A. Mearns.

The Chickaree of Arizona is intermediate between *Sciurus hudsonius* of the Eastern Province and var. *fremonti* of the Rocky Mountain region. Its closest affinities are naturally with the geographically nearer form, var. *fremonti*; but, in its extreme phase approaches very closely in coloration var. *hudsonius*, except in the color of the tail, which is a little redder than in var. *fremonti*. It is somewhat larger than the eastern Red Squirrel, and considerably larger than the neighboring form of the Rocky Mountains—*Sciurus hudsonius fremonti.*

Description of Types.—Color above reddish centrally from the occiput to the base of the tail, finely grizzled with gray and black, becoming more grayish on sides and outer aspect of thighs; black line of sides indicated, though not strongly pronounced; coloring of limbs externally corresponding in the main with that of the sides of the body, except the feet, which are whitish, sprinkled with black and fulvous hairs; fore part of head grayish, inclining to dusky on forehead; under surface, except the tail, a circle around eye, and end of nose except a narrow blackish line above, white; entire pelage plumbeous at base, that below appearing plumbeous on the surface, in places, by reason of the wearing away of the white tips of the hairs; tail, viewed beneath, gray centrally, bordered with black, succeeded by grayish white, and gray all round at base of tail, the black lateral stripes beginning narrowly, and gradually encroaching on the gray central

---

* The numbers of the type specimens are those of the American Museum Catalogue; those given in the tables, where the specimens were collected by myself, are my own original numbers.

MEASUREMENTS* OF 16 FRESH SPECIMENS OF *S. h. mogollonensis* FROM THE MOGOLLON MTS., CENT. ARIZ.

Number.	Sex and age.	DATE.	Nature of specimen.	Total length.	Head and body (measured from nose to *tuber ischii*).	TAIL.			EARS.				Distance between eyes.	FROM TIP OF NOSE TO						FORE LIMB.				HIND LIMB.			
						From root to end of vertebræ.	From root to end of hairs.	Width outspread.	Height above crown.	Height above notch.	Width.	Length of ear-tufts.		Eye.	Centre of pupil.	Ear.	Tip of ear.	Occiput.	End of outstretched hind limb.	Length, measured from coracoid process to end of claws.	From olecranon to end of claws.	Manus, from behind pisiform bone to end long claw.	Manus, width.	Length, measured from great trochanter to end of claws.	From knee-joint to end of claws.	Pes, length.	Pes, width.
135	♀ ad.	Oct. 4, 1884	Fresh	372	197	130	175	....	20	29	22	....	26.5	24.0	....	44	....	53	312	....	....	34	....	....	....	53.0	....
136	♀ ad.	" 4, 1884	"	385	205	135	180	....	22	30	23	....	28.0	23.0	....	46	....	55	325	....	...	35	....	....	....	55.0	...
137	♂ ad.	" 5. 1884	"	378	210	127	168	....	21	30	22	....	29.0	22.0	....	45	....	55	330	....	....	35	....	....	....	53.0	...
537	♂ ad.	May 23, 1887	"	403	225	143	189	75	21	30	22	13	30.0	25.0	29.0	44	69	56	338	104	70	35	10.0	137	99	56.0	11.0
538	♀ ad.	" 23, 1887	"	390	220	141	180	75	22	30	23	11	27.0	23.0	29.0	48	70	56	340	99	72	35	10.0	130	99	52.0	11.0
543	♂ ad.	" 25, 1887	"	395	217	136	181	70	20	30	25	12	27.0	22.0	28.0	45	71	57	332	97	72	34	11.0	140	104	54.0	13.0
544	♂ ad.	" 25, 1887	"	380	210	136	182	75	18	29	23	12	28.0	22.7	28.0	42	70	55	325	94	69	35	10.0	144	100	54.5	12.0
558	♀ ad.	" 27, 1887	"	400	215	152	192	80	21	29	21	9	27.0	23.0	28.0	44	70	55	338	98	70	34	9.5	138	97	55.0	11.0
559	♂ ad.	" 27, 1887	"	422	229	156	202	80	24	32	23	10	28.0	23.0	29.0	45	74	59	353	101	70	38	9.5	144	99	55.0	13.0
560	♂ ad.	" 27, 1887	"	404	211	157	202	75	20	30	25	6	28.0	23.5	28.5	43	71	57	337	100	71	34	9.0	139	98	54.0	11.0
561	♂ ad.	" 27, 1887	"	405	214	151	195	80	24	31	26	8	28.0	23.0	29.0	43	72	56	330	102	71	34	9.3	137	99	54.5	12.5
562	♂ ad.	" 27, 1887	"	420	217	158	204	80	20	30	24	9	28.0	23.0	28.5	43	71	56	343	101	78	35	9.5	141	100	56.0	11.2
563	♂ ad.	" 28, 1887	"	385	211	142	184	70	22	29	23	6	30.0	22.0	27.5	43	69	55	325	96	70	34	9.5	134	97	53.0	11.0
579	♂ ad.	June 6, 1887	"	385	210	128	177	85	21	29	24	7	30.0	23.0	29.0	39	69	57	315	92	71	37	11.0	133	94	54.0	12.0
597	♂ ad.	" 9, 1887																									
598	♂ ad.	" 15, 1887																									
611	♀ ad.	July 21, 1887	"	383	208	140	182	70	21	30	23	....	26.0	23.0	28.0	....	72	54	325	96	69	34	8.0	136	94	51.0	10.0
667	♂ ad.	Aug. 22, 1887	"	400	230	145	185	70	22	31	23	3	28.5	23.0	30.0	44	74	54	338	110	72	37	10.5	141	97	53.0	11.5
Average of 16 of *S. h. mogollonensis*.				394	214	142	186	76	21	30	23	9	28.1	23.0	28.6	44	71	56	331	99	71	35	9.8	138	98	52.8	11.6
" 8 of *S. h. fremonti*†				....	199	126	168	....	18	....	....	....	....	23.0	....	42	....	51	...	....	....	30	....	....	...	48.5	....
" 5 of *S. h. hudsonius*‡				381	204	137	189	82	18	27	19	13	26.8	21.4	26.8	40	65	53	307	91	67	33	9.3	128	94	49.8	11.2

* All measurements given in this paper are in millimetres, unless otherwise stated. † Taken from Allen. ‡ All from Fort Snelling, Minnesota.

MEASUREMENTS OF SKULLS OF FIVE SUBSPECIES OF *Sciurus hudsonius*.

	Number.	Sex.	LOCALITY.	DATE.	AGE.	Total length.	Greatest width.	Basilar length.	Distance between orbits.	Nasal bones, length.	Nasal bones, width behind.	Upper incisors, from front to molars.	Upper incisors, from front to hinder margin of palate.	Upper incisors, height.	Upper incisors, width between external edges.	Upper molars, length taken together.	Upper molars, distance between.	Lower jaw, length.	Lower jaw, height.
S. h. mogollonensis.	559	♂	Quaking Asp, Arizona......	May 27, 1887	Adult.	52.3	29.5	41.0	19.0	17.2	8.7	15.5	27.0	8.0	5.6	9.1	6.0	33.0	17.0
" "	560	♂	" " "	" 27, 1887	"	50.0	29.0	40.0	18.0	15.0	3.0	15.5	27.0	9.5	5.4	9.0	6.0	32 3	16.5
" "	561	♂	" " "	" °7, 1887	"	50.0	29.0	39.5	16.5	16.0	3.2	15.8	26.3	9.0	5.8	9.0	6.0	31.5	16.2
" "	562	♂	" " "	" 27, 1887	"	50.5	28.5	40.0	17.5	16.5	4.0	15.2	27.0	9.0	5.8	9.0	5.9	32.5	16.8
" "	563	♂	Mormon Lake, Arizona.....	" 28, 1887	Very old.	48 4	28.0	38.0	16.5	16.0	3.4	15.4	25.6	7.2	5.8	9.0	6.1	31.0	16.0
" "	667	♂	Baker's Butte, Arizona.....	Aug. 22, 1887	"	51.0	29.0	40.0	17.0	17.1	3.4	15.5	26.5	9.5	5.1	8.4	5.9	82.5	16.5
" "	579	♂	San Francisco Mt., Arizona.	June 6, 1887	Adult.	49.0	28.9	39.0	17.0	15.5	3.3	15.0	25.7	8.4	5.0	8.5	6 0	31.5	16.8
" "	597	♂	" " "	" 9, 1887	"	59.7	28.0	38.5	16.5	16.0	4.0	15.0	26.0	8.7	5.0	9.0	6.1	31.5	16.8
" "	598	♂	" " "	" 15, 1887	Very old.	50.0	28.7	89.3	17.4	16.0	3.0	15.1	26.6	8.9	5.1	9.0	6.0	32.2	16.8
" "	538	♀	Quaking Asp, Central Ariz..	May 23, 1887	"	51.0	29.3	40.2	17.4	17.0	4.0	15.4	27.0	8.9	5.2	9.0	6.0	83.0	16.5
" "	558	♀	" " " " ..	" 27, 1887	"	50.0	28.4	39.3	17.2	16.5	4.0	15.0	27.0	8.9	5 0	9.1	6.0	32.0	16.0
" "	611	♀	Baker's Butte, Arizona.....	July 21, 1887	"	49.5	28.3	88.5	17.0	16.0	3.4	15.0	26.0	9.8	....	8.8	6.0	32 0	16.0
S. h. fremonti......	....	♂	Mill City, Colorado..........	June 20, 1877	Adult.	49.0	28.4	38.5	17.0	15.0	3.0	14.3	25.3	8.5	4.9	9.0	5.4	31.0	16.7
" "	....	♀	" "	July 9, 1877	"	46.5	28.4	87.0	17.0	15.0	3.4	14.3	24.0	8.5	5.0	8.6	5.2	31.0	16.6
Average of 12 skulls of *Sciurus hudsonius mogollonensis*..........						51.0	28.7	39.4	17.8	16.2	3.5	15.2	26.5	8.8	5.3	8.9	6.0	32.1	16.4
" 2 " *Sciurus hudsonius fremonti*..........						47.8	28.4	37.8	17.0	15.0	3.2	14.3	24.7	8.5	5.0	8.8	5.3	31.0	16.7
" 36 " *Sciurus hudsonius hudsonius**..........						45.2	26.2	....	15.5	13.7	3.8	13.7	22.6	7.9	4.8	7.9	5.3	25.7	14.5
" 3 " *Sciurus hudsonius richardsoni**..........						48.3	28.7	....	....	14.7	8.8	14.7	24.4	8.1	....	....	5.8	28.2	15.5
" 5 " *Sciurus hudsonius douglassi**..........						46.2	26.7	....	16.8	13.7	4.3	14.0	23.1	8.4	....	....	6.1	26.2	18.7

* Taken from Dr. J. A. Allen's Monographs of North American Rodentia.

stripe until the latter becomes obliterated at the extremity, which is nearly all black; the 5-striped pattern of the tail less distinct above, and the central area reddish; the slightly developed ear-tufts dusky, and the long, full whiskers jet black.

Cranial and Dental Characters.—In this Chickaree we have the largest skull of any of the five races of *Sciurus hudsonius*, which is remarkable, since in *hudsonius* (verus) there is a notable increase in size to the northward, as shown by Dr. Allen's table of measurements, in the "Monographs of North American Rodentia," p. 688. The dental formula is I. $\frac{1-1}{1-1}$; Pm. $\frac{2-2}{1-1}$; M. $\frac{3-3}{3-3}=\frac{12}{10}$, a minute and functionless premolar being present in nine of the thirteen skulls examined.

Habitat.—This handsome Squirrel is an inhabitant of the fir and spruce woods of the alpine portions of Arizona, where it resides throughout the year, seldom descending into the pines, which constitute a forest zone below the firs and spruces. It is very abundant on the San Francisco peaks, and thence southward in the Mogollon Mountains, and in the eastern spur of that range known as the White Mountains. A Chickaree also inhabits the mountains of New Mexico.

Fiber zibethicus pallidus, subsp. nov.

(PALE MUSKRAT.)

Types, No. 2346, ♂ ad., September 17, 1885, and 2348, ♀ ad., August 28, 1886, both from Fort Verde, Central Arizona. Collected by Dr. Edgar A. Mearns.

Description of Types.—Size, two-thirds that of the eastern Musk-rat. General color, rusty brown, paler and grayish beneath; under fur gray, tipped with rusty or yellowish brown; coarse outer hair scanty, glossy brown, reddish in places; whiskers, and scattered hairs of tail, rich liver-brown.

Cranial Characters.—The skull shows no constant differences from that of the common species, except its very much smaller size, as shown in the subjoined table of measurement.

MEASUREMENTS OF SKULLS OF *Fiber zibethicus pallidus* AND *Fiber zibethicus.*

	Number.	Sex.	LOCALITY.	AGE.	Total length.	From foramen magnum to posterior margin of incisors.	Zygomatic breadth.	Breadth measured at anterior border of auditory meatus.	Height of skull.	Nasal bones, length.	Nasal bones, greatest width taken together.	Upper incisors, from front to molars.	Upper incisors, from front to posterior margin of palate.	Upper incisors, height from alveolæ.	Upper incisors, width between external edges at alveolæ.	Length of upper molar series.*	Distance between middle upper molars.*	Greatest width across upper molars (outside).*	From foramen magnum to hinder margin of palate.	From internasal suture to hinder extremity of interparietal suture.	Antero-posterior diameter of audital bullæ.	Length of mandible, measured from condyle to tip of incisors.	From back of condyle to distal portion of alveolus of incisor.	Height of mandible, measured from condyle to inferior angle.	Height of mandible, meas. from tip of coronoid to inferior angle.	Length of under molar series.*
F. z. pallidus	200	♂	Beaver Creek, Arizona.	Aged.	59.5	54.2	38.0	25.9	24.1	19.2	9.60	25.0	36.1	14.5	9.00	14.0	7.00	12.0	21.0	33.8	13.2	45.5	42.0	19.6	21.1	13.2
	225	♂	Fort Verde, Arizona...	"	62.5	54.3	37.0	25.7	25.5	20.8	9.30	25.0	37.0	14.0	9.00	14.4	7.10	12.2	20.5	34.5	12.4	46.0	42.0	20.0	21.9	14.7
	232	♂	" " ...	Adult.	55.0	48.5	34.0	23.2	22.0	17.0	8.00	22.0	32.5	13.0	8.00	14.0	6.10	11.3	18.5	30.0	11.7	40.2	37.3	18.0	20.0	14.8
	241	♂	Beaver Creek, Arizona.	Aged.	59.5	53.0	37.0	25.2	23.7	19.2	9.00	23.8	34.5	13.2	8.40	14.1	7.10	12.5	21.2	33.2	12.0	44.2	40.2	19.0	21.0	14.5
	451	♂	Fort Verde, Arizona. .	Yg. ad.	59.0	52.0	35.6	25.1	23.2	18.5	8.00	22.8	35.0	14.0	8.70	15.0	6.20	12.0	20.0	33.0	13.0	43.6	40.0	19.0	21.0	15.8
	464	♂	" " . .	Aged.	57.5	51.5	36.3	24.9	23.0	19.0	9.40	22.7	35.0	12.0	8.80	15.0	6.10	11.4	19.5	32.5	12.0	43.0	40.0	18.5	20.5	15.0
Fiber zibethicus.	754	♂	Fort Snelling, Minn...	Yg. ad.	64.1	58.2	39.1	28.2	26.0	20.8	9.20	26.5	38.6	15.0	9.00	16.0	6.25	13.0	22.0	36.8	14.0	49.0	48.5	22.0	23.5	16.0
	755	♂	" " ...	Adult.	65.0	59.1	40.3	29.2	27.0	20.6	9.20	27.0	39.5	14.0	8.20	15.2	6.50	13.2	21.6	34.6	15.0	49.7	44.2	21.2	25.0	16.0
	757	♂	" " ...	"	65.0	59.3	40.9	30.0	28.4	21.5	9.25	28.0	40.0	15.0	9.00	15.1	6.90	12.7	21.2	36.0	14.5	50.5	45.6	22.5	24.6	15.5
	758	♂	" " ...	"	64.6	58.0	39.5	29.2	25.2	21.1	9.20	27.0	39.5	15.2	8.20	15.1	6.25	13.0	21.5	35.0	14.6	49.5	43.5	21.8	23.2	15.8
	759	♂	" " ...	Yg. ad.	64.0	57.5	40.0	28.2	26.0	19.8	9.50	26.1	39.0	14.0	8.10	14.0	6.60	13.0	21.6	35.2	14.5	49.0	42.5	21.5	24.0	16.0
	761	♂	" " ...	Adult.	65.0	59.0	41.0	30.0	26.0	22.0	9.50	27.0	40.0	15.0	8.80	15.0	6.90	13.0	21.5	35.0	15.0	50.4	45.0	23.0	25.1	15.9
	762	♂	" " ...	Yg. ad.	64.5	58.0	39.0	29.0	25.1	21.0	9.70	26.2	40.0	14.0	8.60	16.0	6.30	12.6	21.0	36.4	13.9	48.0	44.0	20.5	23.2	15.1
	764	♂	" " ...	Adult.	65.0	58.5	40.0	27.9	26.5	21.5	9.90	26.5	40.0	15.0	9.00	15.5	6.70	12.8	21.8	35.0	14.0	49.0	44.2	21.0	24.0	15.9
	769	♂	" " ...	Aged.	66.0	59.6	41.7	29.0	28.0	21.0	9.70	27.6	41.0	15.0	9.00	15.5	6.80	13.2	21.0	35.2	15.0	51.0	47.0	22.0	35.0	15.8
	771	♂	" " ...	Yg. ad.	64.5	58.0	38.5	27.2	24.0	20.8	9.50	27.0	39.5	14.0	9.10	16.0	6.90	13.0	21.0	33.7	14.5	45.0	42.0	19.0	22.2	15.0
	830	♂	Ohio....................	"	63.8	56.6	39.0	27.6	25.4	20.0	8.50	26.0	38.0	15.2	9.00	15.0	6.90	12.5	21.0	35.0	14.0	48.5	43.5	22.0	25.0	16.0
	650		....	Adult.	68.0	62.0	41.0	30.0	28.4	23.0	8.90	27.5	41.5	16.0	9.30	16.4	7.10	13.5	24.0	38.0	15.5	50.5	46.0	21.2	24.2	16.0
Average of 6 skulls of *F. zibethicus pallidus.*					58.8	52.2	36.3	25.0	23.6	19.0	8.88	23.5	35.0	13.5	8.65	14.4	6.60	11.9	20.1	32.8	12.4	48.8	40.3	19.0	20.9	14.6
" 12 " *Fiber zibethicus*......					65.0	58.6	40.0	28.7	26.3	21.1	9.83	26.9	39.7	14.8	8.78	15.4	6.67	12.9	21.6	35.5	14.5	49.2	44.3	21.5	24.1	15.7
Percentages of basilar length in *F. z. pallidus*					1.11	1.00	.695	.478	.451	.363	.170	.449	.670	.257	.166	.276	.126	.228	.385	.628	.237	.837	.773	.864	.400	.279
" " " *F. zibethicus.*					1.11	1.00	.682	.491	.449	.360	.159	.458	.677	.252	.150	.262	.114	.220	.368	.605	.248	.839	.754	.866	.411	.267

* Measured on alveolæ.

MEASUREMENTS OF 9 SPECIMENS OF *Fiber zibethicus pallidus* FROM THE VERDE RIVER, CENT. ARIZONA.

Number.	Sex and Age.	Date.	Total length.	Head and body (measured from nose to tuberosity of ischium).	Tail vertebræ.	Tail, greatest depth.	Distance between eyes.	Longest whiskers.	Girth of chest.	Ears.			From Tip of Nose to						Fore Limb.				Hind Limb.			
										Height above crown.	Height above notch.	Width at base.	Eye.	Centre of pupil.	Auditory meatus.	Tip of ear.	Occiput.	End of outstretched hind limb.	From coracoid process of scapula to end of claws.	From olecranon to end of claws.	Manus, from behind pisiform bone to end of claws.	Longest claw of manus.	From great trochanter to end of claws.	From knee-joint to end of claws.	Pes, length, measured on plantar surface.	Pes, length of longest claw.
106....	♂ ad.	June 26, 1884.. .	...	245	203	....	28	62	185	21.0	....	19.0	30	....	....	....	68.0	375	....	....	32	9.0	....	....	62	12.0
200....	♂ ad.	" 15, 1885....	500	280	200	....	28	60	185	17.0	....	20.0	31	34.0	57	77	70.0	372	....	78	33	9.0	....	133	69	11.0
225....	♂ ad.	July 22, 1885....	495	285	197	....	25	60	170	19.0	....	20.0	33	35.0	54	84	71.0	378	....	75	31	9 0	....	120	69	10.0
232....	♂ ad.	Aug. 19, 1885 ...	434	240	171	14	24	58	180	18.0	....	16.0	28	31.0	53	74	61.0	330	....	67	28	9.0	....	102	62	10.0
241....	♂ ad.	Sept. 17, 1885...	480	270	208	....	28	60	190	15.0	....	18.0	30	33.5	57	78	67.0	350	....	73	29	9.0	....	120	67	10.0
451....	♂ ad.	Aug. 23, 1886....	500	267	212	14	23	70	175	17.5	18.0	18.0	31	34.5	56	81	67.0	385	97	75	31	9.0	157	132	70	10.0
454....	♀ ad.	Aug. 28, 1886....	498	265	210	16	26	70	185	18.0	....	20.5	32	33.5	56	80	67.0	375	97	74	31	8.5	148	120	68	11.0
464 ...	♂ ad.	Sept. 20, 1886....	479	267	213	12	23	56	160	20.0	20.0	20.0	31	32.6	60	83	....	371	84	72	32	8.0	146	128	65	9.0
663....	♂ ad.	May 15, 1888....	475	260	220	14	26	65	190	15.0	21.0	20.0	30	33.0	50	80	67.0	365	86	78	31	8.0	142	118	67	9.5
Average measurements of nine specimens..........			482	264	204	14	26	62	180	17.3	19 7	19.1	31	33.4	55	80	69.5	367	91	73	31	8.7	148	122	67	10.3

Remarks.—This Muskrat is abundant on all the streams of Arizona that are tributary to the Colorada River; but I did not find it south of the Gila River. It is very numerous at Fort Verde, where it never builds houses for winter, but lives in burrows in the banks of streams, similar to those occupied by the Beaver, and feeds on fishes and vegetation. The naturalists of the Mexican Boundary Survey found this animal at the mouth of the Gila River. "In one nest which we accidentally opened in the bottom of the Colorado, and supposed to be the habitation of a Muskrat, we found a large store of screw-beans, on which the animal seems to feed in winter time." —(A. Schott.)

The Muskrat inhabiting the plains of Montana, represented in the American Museum Collection by a specimen (No. 552, ♂) from the mouth of Rosebud River, collected by George H. Trook, agrees with the Arizona form both in its small size and pallid coloration. I have been impressed with the general similarity of these two regions, aside from the severity of the winter season in the former, especially the close resemblance of their respective flora; and it is not improbable that the range of the Pale Muskrat of the Great Basin region extends through the dry central plains to Montana.

Arvicola mogollonensis, sp. nov.

(MOGOLLON MOUNTAIN VOLE.)

Type, No. 2351,* ♂, collected by Dr. Edgar A. Mearns, near Baker's Butte, Mogollon Mountains, Central Arizona, July 26, 1887.

Description of Type.—Color above yellowish brown mixed with gray; sides fulvous; belly grayish, washed with pale fulvous; feet and tail grayish; whiskers mostly white, black in front; pelage short and hispid. Forefoot 5-tuberculate; hindfoot 6-tuberculate; soles nearly naked. The dentition shows this species to be a member of the restricted genus *Arvicola.*

---

* Nearly adult; the skull is manifestly immature, although nearly grown.

MEASUREMENTS OF FRESH SPECIMEN.

	MM.
Total length	121.00
Head and body (measured from nose to tuberosity of ischium)	88.00
Tail, measured to end of vertebræ	31.00
" " " hairs	35.00
Ear, height above crown	7.00
" " " notch	9.00
" width at base	9 00
From tip of nose to eye	10.50
" " centre of pupil	12.50
" " auditory meatus	19.00
" " tip of ear	31.00
" " occiput	25.00
" " end of outstretched hinder extremity	117.00
Fore limb measured from head of humerus to end of claws	34.00
" " " olecranon process to end of claws	23.00
" " " behind pisiform bone to end of claws	11.00
Hind limb measured from great trochanter to end of claws	44.00
" " " patella to end of claws	31.00
" " " hinder border of calcaneum to end of claws	18.00
Longest claw of manus	2.00
" " pes	2.20

MEASUREMENTS OF SKULL.

	MM.
Total length	23.00
Basilar length (from foramen magnum to incisors)	19.50
Greatest zygomatic breadth	13.20
Greatest parietal breadth	11.00
Interorbital constriction	3.70
From front of incisor, at base, to molar series	7.60
Length of upper molar series (on alveolæ)	6.00
Length of nasals	6.20
Greatest width of nasals	3.00
Length of mandible (from condyle to distal point of alveolus)	15.00
" " " (from condyle to tip of incisor)	16.00
Height " " (from angle to highest point of coronoid process)	8.20
Length of lower molar series	6.00

Remarks.—This Vole is abundant in the Mogollon Mountains of Arizona, preferring moist openings overgrown with tall brakes and grasses, in which its numerous runways may usually be seen.

Hesperomys leucopus sonoriensis, *Auct.*

It has been with much hesitation that I have divided the group of short-tailed Deer Mice of the west, now known collectively as *Hesperomys leucopus sonoriensis*, into five subspecies; but, in view of the growing inclination on the part of naturalists to acknowledge slight geographical races in zoölogical nomenclature, and of the importance of their recognition in connection with the study and definition of faunal areas, a subdivision of this group appears to be inevitable. Surveying the quite extensive series of specimens in the collection of the American Museum of Natural History, together with those in the Museum of Comparative Zoölogy, at Cambridge, it is found that no less than five very distinct types are represented from the interior region of North America, viz. : a very dark arctic race ; a pale grayish form from the treeless plains of the north ; a more reddish or cinnamon-colored race from the treeless regions of the south ; a darker and browner southern alpine form ; and a pallid race from the desert regions of California and Arizona. Three of these races have received names, all of which can be retained, although the types of the early descriptions may be far from typical examples of these races as they appear to-day, in the light of accumulated material. It becomes necessary, therefore, to redescribe them from specimens reflecting the extreme characters of each subspecies.

These several races should now stand as follows :

Hesperomys leucopus arcticus, subsp. nov. ARCTIC DEER MOUSE.

Hesperomys leucopus nebrascensis (*Baird*). BLACK-EARED DEER MOUSE.

Hesperomys leucopus texanus (*Woodhouse*). TEXAN DEER MOUSE.

Hesperomys leucopus sonoriensis (*Le Conte*). ALPINE DEER MOUSE.

Hesperomys leucopus deserticolus, subsp. nov. DESERT DEER MOUSE.

Synopsis of Subspecies.

Ears medium ; tail long ; pes, about 20 mm. ; pelage very long and dense, everywhere plumbeous at base. Color above, dark grayish brown, with considerable admixture of black in the median line, and little or no fulvous on sides ; ears densely hairy, black outside, edged and coated inside with white ; no white spot in front of the base of the ear ; tail stripe broad and black, occupying about one-half of its circumference ; feet and under parts white ; a black area around the eye.......... .. ..*arcticus*.*

---

* Type of diagnosis, No. 5555. Mus. Comp. Zoöl. (= No. 4531, Smithsonian Institution), from Fort Simpson, Hudson's Bay Territory. ♂ ad., Sept. 7th. Collected by R. Kennicott. For measurements of this specimen, and many others of this subspecies, see Dr. Elliot Coues's Monographs of North American Rodentia, 1877, pp. 66 and 83.

MEASUREMENTS OF FOUR SUBSPECIES OF *Hesperomys leucopus.*

	Number.	Sex and age.	LOCALITY.	DATE.	COLLECTOR.	Nature of specimen.	Total length.	Length of head and body.	Tail to end of hairs.	Ears, height above crown.	Length of hind foot.
H. leucopus nebrascensis	1199	♀ ad.	Calf Creek, Montana.......	Oct. 16, 1887	...Elliot and Richardson ...	Skin.	159.0	92.0	66.0	12.0	20.0
“ “	1200	♂ ad.	“ “	“ 16, 1887	.... “	“	154.0	88.0	64.0	12.2	21.0
“ “	1201	♂ ad.	“ “	“ 16, 1887	.... “	“	155.0	88.0	66.0	12.0	20.0
“ “	1202	♂ ad.	“ “	“ 18, 1887	.... “	“	158.0	92.0	66.0	11.0	20.0
“ “ ...	1203	♂ ad.	“ “	“ 16, 1887	.... “	“	162.0	93.0	68.0	11.5	20.0
“ “	1204	♂ ad.	Big Porcupine Creek, Mon.	“ 18, 1887	.... “	“	144 0	86.0	56.0	11.2	20.0
“ “	1205	♂ ad.	Little “ “ “	“ 29, 1887	.... “	“	165.0	95.0	67.0	12.2	20.0
H. leucopus texanus..........	583	♂ ad.	Northwest corner of Texas.	Oct. 27, 1889	..Mr. Jenness Richardson..	Skin.	139.0	80.0	59.0	11.0	18.5
“ “	584	♂ ad.	North Beaver River, I. Ter.	“ 12, 1889	.... “	“	155.0	88.0	68.0	10.5	20.0
“ “	586	♂ ad.	“ “ “	“ 18, 1889	.... “	“	146.0	82.0	64.0	11.0	18.5
“ “	587	♂ ad.	Tepee Creek, Indian Ter...	Nov. 6, 1889	.... “ ...	“	165.0	89.0	77.0	10.5	19.0
“ “	588	♂ ad.	“ “ ..	“ 8, 1889	.... “	“	142.0	75.0	66.0	10.5	19.0
“ “	585	♀ ad.	Beaver River, Indian Ter.	Oct. 10, 1889	.... “	“	157.0	88.0	70.0	11.0	19.0
“ “	589	♀ ad.	“ “	“ 9, 1889	... “	“	151.0	84.0	68.0	10.5	19.0
H. leucopus sonoriensis.......	581	♂ ad.	San Francisco Mts., Ariz...	June 6, 1887	... Dr. Edgar A. Mearns ...	Fresh	158.0	87.0	74 0	14.0	18.5
“ “	585	♂ ad.	“ “ “	“ 9, 1887	.... “	“	146.0	81.0	65.0	14.0	19.0
“ “	610	♂ ad.	Baker's Butte, Cent. Ariz..	July 19, 1887	... “	“	157.0	90.0	73.0	16.0	19.0
“ “	632	♂ ad.	“ “ “	Aug. 21, 1887	.... “	“	146.0	86.0	60.0	17.0	18.5
“ “ ...	582	♀ ad.	San Francisco Mts., Ariz...	June 7, 1887	.... “ ...	“	163.0	88.0	77.0	15.0	19.0
“ “	629	♀ ad.	Baker's Butte, Cent. Ariz..	Aug. 15, 1887	.... “	“	162.0	97.0	67.0	17.0	21.0
H. leucopus deserticolus.......	1175	♂ ad.	Mojave Desert, California..	June 5, 1887	.....Mr. F. Stephens......	Skin.	168.0	83.8*	78.7*	11.2	20.8
Average of 7 specimens of *Hesperomys leucopus nebrascensis*..........							156.7	90.6	64.7	11.7	20.1
“ 7 specimens of *Hesperomys leucopus texanus*..........							150.7	88.7	67.4	10.7	19.0
“ 6 specimens of *Hesperomys leucopus sonoriensis*..........							155.3	88.2	69.3	15.5	19.2
One specimen of *Hesperomys leucopus deserticolus*..........							168.0	88.8	78.7	11.2	20.8

* These measurements were taken from fresh specimen by the collector.

Ears rather large; tail short; pes, about 20 mm.; pelage long and dense. Color above, pale grayish fulvous, very finely lined with black; ears densely hairy, black outside, edged and coated inside with white; a small but conspicuous white patch in front of each ear; tail stripe narrow and black; with less black around the eye....................*nebrascensis*.[*]

Ears small; tail short; pes, 19 mm.; pelage dense, but shorter. Color above, cinnamon-fulvous, inclining to reddish, slightly darker in the median line; ears not densely pilose, brownish, with hoary edging extending but little inside; white patches in front of ears inconspicuous; tail stripe brownish black; without black around the eye........................*texanus*.[†]

Ears very large; tail short; pes, about 19.2 mm.; pelage dense, but rather short. Color above, brownish fulvous, mixed with black; ears dusky, with hoary edging; tail stripe narrow and dusky............*sonoriensis*.[‡]

Ears medium; tail long; pes, nearly 21 mm.; pelage short and hispid. Color above, pale cinereous drab, slightly darkened in the median line, becoming light fulvous on sides and rump; ears nearly naked, hoary edged; tail very narrowly striped with dark brown above; whiskers reaching to shoulders.......................................*deserticolus*.[§]

The skulls of these four races afford no tangible differential characters.

I am fortunate in being able to present the foregoing measurements of a series of adult specimens of *nebrascensis* and *texanus*, from skins prepared by the same person. The measurements of *sonoriensis* were all taken by me, from fresh specimens, in the field.

Sigmodon hispidus arizonæ, subsp. nov.

(ARIZONA COTTON RAT.)

Type, No. 2370, ♂ ad., Fort Verde, Arizona, September 13, 1885. Collected by Dr. Edgar A. Mearns.

Description of Type.—Larger than *Sigmodon hispidus* Say & Ord, with more hairy and relatively larger ears, and longer tail. Colors much paler, both as to the coarse outer coat and the under fur. Pelage coarser, and more hispid. Skull and dentition heavier. Above light yellowish brown, mixed with ashy, lined sparingly with black; below white; pelage everywhere plumbeous at base; tail dusky above, whitish below. Ears large, orbicular, clothed with yellowish brown hairs on both surfaces, more sparingly outside.

A Young Male of the Year (No. 2372, ♂ juv., Fort Verde, Arizona, October 2, 1885. Dr. Edgar A. Mearns) differs from adults

---

[*] Type of diagnosis, No. 1200, American Museum Collection.

[†] Type of diagnosis, No. 2508, American Museum Collection.

[‡] Type of diagnosis, No. 2357, American Museum Collection.

[§] Type of diagnosis, No. 1175, American Museum Collection.

COMPARATIVE MEASUREMENTS OF SKULLS OF *Sigmodon hispidus* AND ITS SUBSPECIES.

	Number.	Sex.	LOCALITY.	COLLECTED BY.	AGE.	Total length.	Height.	Greatest zygo. breadth.	Basilar length of hensel.	From front of incisors to hinder margin of palate.	From front of incisor to molars.	From foramen magnum to poste'r border of palate.	Distance between last upper molars.	Length of mandible.	From coronoid to tip of incisor.	From condyle to tip of incisor.	Interorbital constriction.	Length of nasal bones.	Upper incisors from alveolus.	Lower incisors from alveolus.	Length of upper molar series.	Length of lower molar series.	Length of interparietal suture.	Length of interfrontal suture.
S. hispidus arizonæ.	242	♂	Ft. Verde, Ariz.	Mearns. ..	Old.	40.3	16.0	23.0	32.0	21.0	13.5	14.0	3.90	22.2	20.6	26.4	5.70	15.9	7.10	10.0	7.00	7.90	7.50	14.1
	455	♀	" "	"	Yg. ad .	....	....	20.9	....	19.5	11.6	....	3.50	19.6	20.0	23.7	5.30	15.0	5.90	8.5	6.50	7.20	7.00	13.8
Sigmodon hispidus.	1010	♀	Raleigh, N.C.	Brimley. ..	Adult.	35.9	13.6	21.0	28.8	19.2	11.8	11.7	3.60	20.5	20.7	24.0	6.10	14.3	7.00	8.8	6.90	7.00	6.00	12.4
	933	♂	" "	"	Very old.	37.5	15.2	20.8	30.1	19.3	12.6	13.3	4.50	20.8	20.4	24.8	5.20	15.9	7.40	10.0	6.80	7.10	5.90	12.8
	935		" "	"	Yg. ad.	34.5	13.5	20.9	28.3	18.5	11.5	12.0	3.40	19.9	19.0	23.2	5.10	13.8	6.90	9.4	6.40	7.00	5.30	11.9
	961	♀	" "	"	Adult.	33.6	13.4	20.0	26.3	16.6	10.6	11.7	3.30	19.0	18.0	21.5	5.50	14.0	6.30	7.7	6.30	6.70	6.00	11.2
	1095	♂	Gainesville, Fla.	Chapman...	"	34.6	13.2	19.5	28.0	18.5	11.5	12 0	3.60	19.6	17.5	22.0	4.80	13.8	6.60	8.0	6.50	6.50	5.20	12.0
	1096	♂	" "	"	"	35.5	13.3	19.9	28.9	18.7	11.5	12.7	3.70	20.1	19.2	23.0	5.00	13.8	6.00	7.5	6.60	6.90	5.60	12.3
	1097	♂	" "	"	Very old.	36.2	13.8	20.0	29.2	19.0	12.0	13.0	3.80	21.1	19.5	23.8	5.00	14.0	6.90	8.8	6.80	6.80	6.50	12.9
	1168	♂	" "	"	"	37.8	15.0	21.0	....	20.5	13.2	....	4.10	22.0	21.0	25.0	5.30	15.0	8.00	10.0	6.60	7.00	6.00	13.4
	1170	♀	" "	"	Old.	35.6	13.4	20.0	29.3	19.0	12.0	12.8	3.70	21.0	19.9	24.0	5.90	14.0	6.80	10.0	6.60	6.50	6.90	13.0
Sigmodon h. littoralis.	1099	♀	E. P. Micco, Fla.	Chapman...	Adult.	34.0	13.0	19.9	27.4	18.0	11.0	11.2	3.10	19.0	17.4	21.7	5.00	12.8	5.80	7.8	6.50	6.80	5.40	13.0
	1100	♂	" "	"	"	....	12.8	20.3	29.0	18.6	11.0	12 5	3.50	20.0	....	....	5.70	....	6.00	....	6.80	6.90	6.30	10.4
	1106	♀	" "	"	"	37.0	13.5	21.0	30.1	19.9	12.5	13.3	4.00	21.4	20.5	24.0	5.40	13.5	6.20	9.3	6.80	7.10	5.70	13.5
	1110	♀	" "	"	Old.	36.5	13.5	20.2	29.5	19.1	11.7	12.7	3.40	21.0	20.0	23.5	5.80	13.9	6.00	8.8	6.70	7.00	6.30	13.0
	1111	♂	" "	"	"	34.4	14.0	19.9	27.6	18.0	11.0	12.0	3.50	20.0	18.6	22.1	5.70	13.1	5.70	7.0	6.60	6.50	6.10	11.9
	1112	♀	" "	"	Yg. ad.	35 0	13.2	20.0	28.0	18.8	11.3	11.8	3.50	20.1	19.0	23.2	5.30	13.0	6.30	8.5	7.00	7.00	6.50	13.7
	1113	♀	" "	"	Old.	35.0	13.5	20.6	27.6	19.0	11.1	11.6	3.70	20.0	19.2	22.0	6.00	12.2	6.10	7.9	7.10	7.00	6.40	12.2
	1102	♂	" "	"	Adult.	36.7	13.9	....	30.8	18.9	11.6	13.0	3.60	20.8	18.8	24.2	5.30	14.0	6.60	9.3	7.00	7.00	6.50	14.0
Type of *Sigmodon hispidus arizonæ*..................						40.3	16.0	23.0	32.3	21.0	13.5	14.0	3.90	22 2	20.6	26.4	5.70	15.9	7.10	10.0	7.00	7.90	7.50	14.1
Average of 9 skulls of *Sigmodon hispidus hispidus*........						35.9	13.8	20.3	28.6	18.8	11.9	12.4	3.74	20.4	19.5	23.5	5.32	14.3	6.88	8.9	6.62	6.83	5.93	12.4
" 8 skulls of *Sigmodon hispidus littoralis*........						35.5	13.4	20.3	28.7	18.8	11.4	12.3	3.54	20.8	19.1	23.0	5.45	13.2	6.03	8.4	6.81	6.91	6.15	12.7
" 5 skulls of *Sigmodon "berlandieri,"* from Mex.*						31.9	12.8	19.2	....	....	....	....	....	....	16.9	21.0	4.83	12.5	5.34	7.9	5.89	....	....	....
"7210, Orizaba, Mexico, '*toltecus*'; youngish."*						29.2	....	17.8	....	....	....	...	....	....	15.2	19.6	4.57	10.7	4.83	....	....	....	....	...
Average of 2 adult Sigmodons from Mojave Valley, Cal.*..						33.0	13.5	19.3	....	...	....	....	....	....	18.5	22.8	5.08	12.9	6.10	8.6	6.86	....	....	...

---

* Taken from Coues, N. A. Rodentia, p. 33.

in being less yellowish brown, especially about the nose and flanks ; it is more ashy.

Remarks.—The material at hand for comparison comprises a large series of skins and skulls of *Sigmodon hispidus* (verus) from Florida and the Atlantic coast, and of *S. hispidus littoralis* from the East Peninsula, opposite Micco, Brevard County, Florida, together with *S. hispidus berlandieri* from Corpus Christi, Texas, and the type of the very distinct *S. fulviventer* of Dr. Allen. In the survey of this material, the discrepancy in the sizes of Arizona and eastern or southern specimens is very apparent ; but, in the absence of detailed measurements of fresh specimens, it is impossible to make exact comparisons. However, the following measurements, taken from fresh specimens by competent collectors, will prove useful. Only adults, having prominently beaded skulls, with the sutures reasonably closed, are included :

	Total length.	Tail.
Average of 10 specimens of *Sigmodon hispidus**...	262.74	100.87
Average of 8 specimens of *S. hispidus littoralis*†..	275.75	104.63
Type of Baird's *Sigmodon berlandieri*‡....... ...	250.86	116.84
Specimen of De Saussure's "*Hesperomys toltecus*"‡	218.44	91.44
Type of *Sigmodon hispidus arizonæ*.....	320.00	121.00

*Six males and four females. Six are from Gainesville, Florida, and measured by Mr. Frank M. Chapman, and four from Raleigh, N. C., measured by Mr. Brimley.

†Measured by Mr. Frank M. Chapman.

‡Taken from Dr. Coues's table, the total length being the sum of the measurements of head and body, and tail, there given separately.

The excellent series of skulls in the collection of the American Museum of Natural History, N. Y., affords better material for size comparisons. In the accompanying table of measurements only well-grown skulls, in which the supraorbital bead is well displayed, have been selected.

From a study of this material, it is apparent that there are four recognizable races of the single representative of this genus found within our borders. Of these *S. hispidus berlandieri* is the smallest, and, perhaps, the least deserving of subspecific rank. The specimens of this race from Corpus Christi, Texas, above alluded to, are in the collection of Mr. Geo. B. Sennett.

In size they correspond with Prof. Baird's type, adult skulls affording similar measurements to those of Dr. Coues, from Mexico.

Dipodomys merriami,* sp. nov.

Type, No. 2394, ♂ ad., New River, Arizona, May 16, 1885. Collected by Dr. Edgar A. Mearns.

Description of Type.—Toes 5-4. Form slender and delicate; tail elongate; ears large, scantily haired. Pelage above mouse gray at base, overlaid with pinkish buff; sides sandy; sides of nose and face nearly back to the eyes, spot at posterior base of ears, band across thighs and encircling base of tail, and all below, pure white, except a dusky stripe on plantar surface of foot; a dusky spot at root of tail above, at base of whiskers, and at the end of the nose; whiskers mixed white and blackish; tail with a white band on each side becoming obsolete near the extremity, drab-gray on upper and under sides and terminal one-fourth.

Remarks.—The tail and limbs are much more slender than in *D. ordi* or *D. chapmani.* The skull, likewise, is much lighter, and considerably smaller than in *D. ordi*, which is a stouter, heavier animal.

The principal agreement between this species and Gray's description of *D. phillipsi* consists in the character "toes 5-4," given in the description of the genus, of which his "*D. Phillipii*," taken by John Phillips, Esq., near Real del Monte, Mexico, is the type. His description reads as follows: "*Dipodomys Phillipii*, Gray. Grey-brown, with longer black hairs; sides sandy; sides of the nose, spot near the base of the ears, band across the thighs and beneath, pure white; nose, spot at the base of the long black whiskers, and at the base of the tail, black; tail black-brown, with the band on each of its sides and tip white. Length: body and head, 5 inches; tail, 6½ inches; hind feet, 1½ inch."

---

* Named in honor of Dr. C. Hart Merriam, Chief of the Division of Economic Mammalogy and Ornithology, U. S. Department of Agriculture.

MEASUREMENTS.

	MM.
Total length	281.00
Head and body (measured from nose to tuberosity of ischium)	110.00
Tail, from root to end of vertebræ	149.00
“ “ “ hairs	170.00
Ears, height above crown	10.00
“ “ meatus	13.00
Girth of chest	72.00
From tip of nose to eye	23.00
“ “ ear	36.00
“ “ auditory meatus	37.00
“ “ tip of ear	49.00
“ “ occiput	40.00
From olecranon to end of claws	31.00
Manus (measured from behind pisiform bone to end of claws.	12.00
From patella to end of claws	73.00
Pes (measured from calcaneum to end of claws)	36.00

Dipodomys chapmani,* sp. nov.

Types, No. 2400, ♂ ad., January 26, 1887, and No. 2398, ♀ ad., October 1, 1885, both from Fort Verde, Arizona. Collected by Dr. Edgar A. Mearns.

Description of Types.—Toes 5-5. Above the predominant color is mouse gray, mixed with black and buff, becoming sandy buff on sides; sides of nose, spot behind the whiskers, above the eye, and at the base of the ear, band across thighs and encircling base of tail and all below, pure white, except a broad blackish stripe on plantar surface of foot; a black spot at the root of the whiskers; a dusky circle around eye, and a dusky spot on nose, at base of tail, and above heel; whiskers blackish mixed with white; tail banded with white on sides nearly to end of vertebræ, residue drab-gray. Ears clothed with very short hairs on both surfaces. Sexes alike.

A young specimen (No. 131, ♀ juv., Fort Verde, Arizona, September 20, 1884. Collected by Dr. E. A. Mearns) is darker than adults, having the pelage considerably mixed with black, the sides having the coloring of *Perognathus*—buff, lined with black; whiskers with more white than black; caudal pencil jet black.

Two suckling young (Nos. 2396, ♂ juv., and 2395 ♀ juv., April 27, 1886, Fort Verde, Arizona. Collected by Dr. Mearns), taken

---

*Named in honor of Mr. Frank M. Chapman, of the American Museum of Natural History.

MEASUREMENTS OF SEVEN SPECIMENS OF *Dipodomys chapmani*, FROM FORT VERDE, ARIZONA.

													FROM TIP OF NOSE TO						FORE LIMB.					HIND LIMB.				
Number.	Sex and age.	DATE.	Nature of specimen.	Total length.	Head and body.	Tail vertebræ.	Tail, measured to end of hairs.	Distance between eyes.	Chest, girth.	Ears, height above crown.	Ears, height above notch.	Ears, width at base.	Eye.	Centre of pupil.	Auditory meatus.	Tip of ear.	Occiput.	End of outstretched hind limb.	From head of humerus to end of claws.	From olecranon to end of claws.	Manus, length.	Manus, width.	Manus, length of longest claw.	From great trochanter to end of claws.	From patella to end of claws.	Pes, length.	Pes, width	Pes, length of longest claw.
250	♀ ad.	Oct. 1, 1885	Fresh	280	107	148	175	18.0	80	11.0	13.0	12.0	24.0	26.0	35.0	50	42	180	40	29	11.5	....	6.2	...	68	38	....	4.0
403	♀ ad.	April 27, 1886	"	260	102	140	160	17.0	90	10.0	13.0	13.0	24.0	27.0	35.0	48	41	178	40	31	13.0	4.5	5.5	88	68	38	....	5.0
442	♂ juv	Aug. 3, 1886	"	230	100	132	188	18.0	70	12.0	12.0	12.0	22.0	25.0	33.0	47	38	168	37	30	12.0	....	....	85	67	37	....	....
483	♂ ad.	Jan. 26, 1887	"	256	106	137	158	18.0	68	11.0	13.0	10.5	22.5	24.5	33.0	48	38	175	40	30	12.5	4.9	4.4	88	70	36	7.0	4.0
484	♀ ad.	"	"	245	102	125	144	18.3	65	11.0	13.0	10.5	22.0	24.5	33.0	46	38	172	40	29	12.0	4.8	4.2	91	72	38	7.3	4.5
485	♂ ad.	"	"	252	100	138	161	18.4	66	10.5	13.0	11.0	22.0	25.0	33.5	47	38	170	38	29	13.0	4.7	5.0	88	72	36	7.0	4.0
486	♂ ad.	"	"	268	110	142	166	18.0	70	11.5	14.0	12.0	22.0	25.0	33.0	47	38	180	41	31	12.5	4.6	4.5	94	70	38	7.0	4.0
Average*				260	104	138	161	18.0	73	10.8	13.2	11.5	22.8	25.3	33.7	48	39	176	40	30	12.4	4.7	5.0	90	70	37	7.0	4.2

* No. 442 is excluded from the average, it being immature.

MEASUREMENTS OF FIVE SKULLS OF *Dipodomys chapmani.*

Number.	SEX AND AGE.	LOCALITY.	DATE.	Total length.	From foramen magnum to posterior border of incisors.	Zygomatic breadth.	Greatest width of skull (measured across tympanic bullæ).	From base of incisors, in front, to molar series.	From foramen magnum to base of palital spine.	Interorbital width at point of greatest constriction.	Length of nasal bones.	Upper incisors, length.	Lower incisors, length.	Length of upper molar series.	Length of lower molar series.	Length of mandible, measured from condyle to tip of incisors.
250...	♀ ad.	Fort Verde, Arizona.............	October 1, 1885	37.2	23.5	17.0	23.0	10.1	11.1	13.0	13.5	5.8	6.0	5.0	4.6	18.3
483...	♂ ad.	" "	January 26, 1887..............	37.3	23.0	....	23.7	10.1	10.9	13.0	13.1	6.0	5.7	4.2	4.4	17.7
484...	♀ ad.	" "	" "	35.5	21.2	....	23.5	10.1	10.0	12.5	12.6	6.0	5.1	4.8	4.6	17.3
485...	♂ ad.	" "	" "	36.2	22.0	....	23.4	10.0	10.4	12.0	13.2	5.9	5.7	4.9	4.6	18.0
486...	♂ ad.	" "	" "	36.2	21.3	16.3	23.0	10.1	10.0	12.4	13.0	6.0	5.4	4.4	4.2	17.0
Average of five skulls...				36.5	22.2	16.7	23.3	10.1	10.5	12.6	13.1	5.9	5.6	4.7	4.5	17.7

with their mother, are extremely interesting. The color pattern is very sharply defined. They differ from adults in having the fore part of the back and sides broccóli brown, sparingly lined with black, while the back part of the dorsal surface—a diamond-shaped area—is very dark gray-brown, producing a striking contrast with the front part of the dorsal region, which is not apparent in adults.

Remarks.—This species differs from specimens of *D. ordi*, from near the typical locality, in being much more slender, with relatively longer tail, and much darker colors. The skull is very much lighter, and smaller, as shown by the accompanying table of measurements.

Lepus alleni,* sp. nov.

(ALLEN'S HARE.)

Type, No. 2412, ♂ ad., from Rillito Station, on the Southern Pacific Railroad, Arizona, May 8, 1885. Collected by Dr. E. A. Mearns.

Description of Type.—Size large, much exceeding *Lepus callotis* or *Lepus texianus*; ears very large, nearly naked, except on edges. Color above yellowish brown, strongly mixed with black, this color extending from the nape to the rump, but not reaching the tail; hairs of nape plumbeous, tipped with fulvous; base of ears white; sides, including outer side of limbs, hips and rump, white, with fine black points to some of the hairs, which gives a general light gray to these parts; chin, throat and under surface in the median line, pure white, as are the inner sides of the fore legs above, the inner sides of the hind limbs throughout, and the upper surface of the feet; sides of neck whitish above; breast bright fulvous, this color extending backward upon the lower part of the neck and blending with that of the back; entire head with a whitish cast, more or less mixed with black and suffused with fulvous; orbital ring white; lashes black; whiskers chiefly black, instead of white as in *Lepus callotis* (?) and *Lepus texianus*. The ears, except the long fringes on their edges and tips, which are white, are nearly naked, being sparsely covered with short, whitish or pale fulvous down, with a few blackish hairs near the tip. Tail lined above with plumbeous-black, which color extends forward upon the rump; residue gray. The dense coating upon the under side of the feet is brown, strongly contrasting with their white upper surface.

---

*Named in honor of Dr. Joel Asaph Allen, Curator of the department of Mammals and Birds, American Museum of Natural History.

Salient features in the general aspect of this Hare are its whitish sides, fulvous gular patch, and enormous, whitish ears.

A specimen taken earlier in the season (No. 175, ♀ ad., Mearns Collection, from Picacho Station, on the Southern Pacific Railroad, Arizona, April 2, 1885) still retains the winter pelage above, which is much longer than the summer coat, and more variegated with black and fulvous. There remain a few long hairs of the winter coat upon the sides, whose broad fulvous tips indicate that the fulvous extends farther down in winter.

Cranial Characters.—The skull and dentition of this species are remarkably heavy, as compared with *Lepus texianus*, as is well shown in the accompanying table of measurements. The supraorbital process of the frontal bone is less arched, probably never forming the highest point of the skull, as is frequently the case in *Lepus texianus*, in which, however, the highest point is often at the middle line of the frontal bone opposite to the posterior supraorbital foramen. The nasal bones, premaxillaries, malars, and in fact the entire skull, has a heavy, massive appearance, contrasting in this respect with the more fragile skull of *L. texianus*.

Remarks.—This large and remarkably handsome Hare is a characteristic species of the extensive desert lying between Phœnix and Benson, Arizona, in which remarkable region it is very abundant. It was associated with the *Lepus texianus*, both species having been often seen at once, their different gaits, when running, at once distinguishing them. They were found together over a large area, each manifesting its specific characters typically, and neither showing any approach whatever to the other.

Allen's Hare appears to be a very distinct species. Two other Jackass Hares are known to inhabit Arizona. *Lepus californicus* ranges eastward through California to the Colorado River, and has been ascertained to inhabit sparingly the western border of Arizona, where I have myself seen what I supposed to be that species, on the Colorado River, near Fort Mojave. It requires no comparison with *Lepus alleni*.

The common Jackass Hare of Arizona, abundant almost throughout the Territory, is the *Lepus texianus* of Waterhouse. In this species *the nape and base of the ear are never black*, as these parts are in the Mexican Hare (*Lepus callotis* Wagler). It differs considerably from the Jackass Hares of northwestern Texas, Indian Territory and Kansas,* and is widely different from the descriptions of Wagler's *L. callotis*, of Wagner's three "varieties" of *callotis*, and in fact from all of the forms described from Mexico, lately synonymized with *L. callotis* Wagler.

There is no conclusive evidence that the Mexican Hare (*Lepus callotis* Wagler) has ever been found in California or Arizona. There is an old specimen of Verreaux's in the American Museum, labeled "*Lepus calotis*, Waterh., Californie," which agrees in every detail with the early descriptions of *Lepus callotis*. Waterhouse had before him the type specimen of Bennett's *L. nigricaudatus*, said to have come "from that part of California which adjoins to Mexico," and he states that *L. callotis* "inhabits Mexico and the adjoining part of California;" but, as remarked by Dr. Allen, these specimens "doubtless came from Western Mexico."† Comparing *Lepus alleni* with this specimen, assumed to be from Western Mexico, the two appear to be wholly distinct. Verreaux's specimen (No. 5562, Verreaux Collection, No. 798 American Museum Collection) has the ear measuring but 115 mm. in length from the notch by 75 mm. in width, and the hind foot only 123 mm. in length, while *L. alleni* has an ear measuring 156 mm. in length from the notch and 95 mm in width, and a hind foot 138 mm. in length. The coloration is likewise very different, when due allowance has been made for the fading of the Verreaux specimen. In this comparison, *Lepus texianus*, also, appears as a very distinct species from *L. callotis*, from Mexico, whatever may be its relationship to the Hares of the United States east of the Rocky Mountains.

Lepus callotis exhibits considerable variation in color, even in specimens from south of the United States. The Tehuantepec

---

*The Jackass Hare of this region is usually termed *Lepus texianus* or *Lepus callotis texianus*, and, while it is the *L. texianus* of Audubon and Bachman, it is not the *L. texianus* of Waterhouse, as will be shown later.

†Baird says (Mam. N. Amer., 1857, p. 591) "not a single one of the species assigned by him [Bennett] to 'California, adjoining Mexico,' has been found in that State. The probabilities are that they came from the Southern part of Sonora, west of the Sierra Madre."

specimens described by Dr. Allen, and Wagner's "var. *flavigularis*," approach *L. alleni* most closely, but present important points of difference, particularly the black color of the nape and base of ears, and are very much smaller, as shown by the measurements, more especially those of the skulls.

Lepus melanotis, sp. nov.

(EASTERN JACKASS HARE.)

In identifying the Arizona Hare (*Lepus texianus* Waterhouse) I compared it with the form of *Lepus callotis* found east of the Rocky Mountains, which Dr. Allen has designated as a northern race, under the name of *Lepus callotis texianus*, not having in his hands the material necessary to show the true status of the Great Basin form—*texianus*. Finding that the two animals were at least subspecifically distinct, I turned to the original description of *Lepus texianus*, where the Arizona Hare is unmistakably described, Waterhouse's excellent description being based on a single specimen "in the collection of the Zoological Society, of which the history is not known," and consequently from an unknown locality. He states that Mr. J. W. Audubon recognized it as a species with which he was well acquainted, and informed him that it inhabited Texas, and would shortly be published in the great work on the North American Quadrupeds, having been named *Lepus texianus*. Accordingly, Waterhouse adopted the MS. name of Audubon and Bachman; but those authors subsequently described a different Hare, from Texas, under the name of *Lepus texianus*. This leaves the northern animal, inhabiting the region east of the Rocky Mountains without a name, Audubon and Bachman's *L. texianus* being preoccupied, and also unfortunately gives to the Arizona and Great Basin form a name geographically inappropriate. It has been treated by the various writers on mammalogy under but two names (*Lepus callotis*, and *L. texianus* or *L. callotis texianus*), both of which were preoccupied. Professor Baird (Mammals of North America, 1857, p. 590; United States and Mexican Boundary Survey, II, ii, 1859, p. 45) united all the Hares of the *callotis* type under *Lepus callotis*; while Dr. Allen discriminated between the northern and southern forms, naming the former *Lepus callotis texianus*, unfortunately applying Waterhouse's name, which pertains exclusively to the form west of the Rocky Mountains, which his scanty material did not then warrant him in separating from the eastern form. All other synonyms for the Hares of the *callotis* group are based on specimens from Mexico.

Description.—Type, No. 2422, ♂ ad., from Independence, Kansas,* January 27, 1890. Collected by Dr. Edgar A. Mearns.

Color above brownish fulvous, much mixed with black, the fulvous extending down upon shoulders and outer side of fore legs; breast much brighter, more ochraceous fulvous; haunches and outer side of hind limbs abruptly white, pointed with black; inner side of limbs white; a tuft of long, fulvous hair on sides of abdomen, in front of thighs; below pure white; ears having the very long fringe on their anterior edge ochraceous, the shorter fringe on posterior edge white, their concave surface with a long, dusky patch adjoining the white fringe of the posterior edge, in which the hairs are black, tipped with fulvous; anterior half of convex surface of ear ochraceous, varied with black, its posterior half being white, except the apical portion, where it is jet black for the distance of 30 mm.; nape and base of ears white, with a mesial stripe of fulvous; upper surface of tail black, that color extending forward on the rump to opposite the acetabulum.

On comparing the type, above described, with other specimens in the American Museum Collection, from Kansas, western Texas and Indian Territory, I can find no appreciable difference, save in the very slightly paler colors of the western examples.

This Hare differs from *Lepus texianus* in just about the same particulars that the two forms of *Lepus sylvaticus*, from corresponding localities, differ from each other. That is to say, in the Arizona animals the ears are much larger, the colors paler and more ashy; while, conversely, those from east of the Rocky Mountains have a richer coloring, and small ears. In *L. melanotis* the gular patch is bright fulvous, while in *texianus* this part is pale brownish yellow, the same color staining the haunches, inner side of limbs, and sometimes the abdomen, which parts are white in *melanotis*. The ears are more ochraceous in *melanotis* than in *texianus*. The accompanying table of comparative measurements shows the relative dimensions of these two, and of *L. alleni*, the measurements of their skulls being presented in another table.

---

*This is a market specimen, invoiced with several hundred pairs from the above locality, most of which I examined, and which I am informed were doubtless killed on the northern border of Indian Territory. They command a ready sale, in the New York markets, at $1.50 per pair.

Remarks.—In naming the eastern Jackass Hare, a perplexing question arises as to its relationship with *Lepus callotis* and *L. texianus*. Dr. Allen has shown that at least two of these Hares probably intergrade, but it is quite improbable that the aggregate material hitherto accumulated in our museums is sufficient to show the true relationship of the three forms in question ; and, as I have no intergrades, all of my specimens being typical of one or the other forms, I am unable to surmise in which direction its closest affinity lies, and therefore accord it, for the present, specific rank.

We have, excluding the California species, four Jackass Hares in the region lying between the Mississippi River and California, belonging to what we may designate as the *callotis* type—species which do not change to white in winter, and have the upper surface of the tail black. There is a northern and a southern form east of the Rocky Mountains, and a northern and a southern species west of that range. The northern species west of the Rocky Mountains, and the northern form east of them, resemble each other most closely in general appearance ; while the two southern species, likewise, have many features in common. The two northern forms, and also the southern, are separated from each other by a lofty range of mountains, which is quite an effectual barrier to these inhabitants of the plains, and which is recognized as one of the sharpest lines of division between faunal provinces of which we have any knowledge. Therefore, notwithstanding the close resemblance between *Lepus texianus* and *L. melanotis*, I must hesitate to unite them as races of a single species until the narrow gulf which separates them is bridged by intermediate specimens. It sometimes occurs that the line of division is most inflexible between very closely-allied species, as, to cite an ornithological instance, in the case of the species of the genus *Empidonax*; and so it may be with these two Hares, whose points of difference are mainly anatomical, they belonging to a very homogenous genus, in which there is a tendency to special group marks, such as the pronounced gular patch, found in *Lepus timidus* and various old world Hares, as well as those of the present group; indeed, I can well imagine that an example of *L. campestris*, deprived of its white tail, and in summer coat, could be mistaken for one of this group, if color were made the basis of comparison, and anatomical peculiarities not brought into requisition. Moreover, if this Hare does intergrade with *L. texianus* the transition must take place over a very limited area, as the American Museum contains specimens of either, from points as near together as Deming, in south-central New Mexico, and the northwestern corner of Texas, where three States and Territories meet.

In view of the evidence adduced by Dr. Allen, it would seem quite natural to unite this with *Lepus callotis*, assuming that it merged into that species near the Mexican border; but I am enjoined to caution in this direction, by the proof of the positive distinctness of the two corresponding species, on the opposite side of the Rocky Mountains.

Although it is highly probable that two or more of the forms under discussion will be united as races of a common species, I should not be greatly surprised to see all of them holding the rank of specific distinctness in the classification of the future. It seems to be a case where judgment may be properly suspended to await the evidence of new material and new facts.

Synopsis of Four Species of Jackass Hares.

Largest. Color above, brownish fulvous back to the sacrum; whole of sides, sides of rump, and outer surface of limbs, white, lined with black; inner side of hind limbs, posterior edge of fore limbs, and median line below, pure white; back of neck, in summer, pale plumbeous; base of ears white; under surface of feet and gular patch, bright fulvous; general color of head, pale yellowish gray; ears enormous, nearly bare, whitish, with white fringes; whiskers black. Total length, 643; caudal vertebræ, 69; ear from crown, 195; ear from notch, 156; hind foot, 138. Skull, 113 x 50; mandible, 83.... ....*Lepus alleni.*

Smallest. Color above, pale yellowish gray, varied with black and fulvous; lower half of the sides of the body, limbs, and rump, white, lined with black; below white, or tinged with fulvous; back of neck, and base of ear

externally, black in summer ; little or no black at apex of ears, which are yellowish or whitish ; whiskers usually black. Ear from crown,[*] 138 ; ear from notch,[†] 115 ; hind foot,[†] 123. Skull, 99 x 46 ; mandible, 70.
Lepus callotis.

Size large. Color above, pale grayish fulvous, much mixed with black ; breast and shoulders pale yellowish brown ; throat, edge of abdomen, sides of rump, thighs, inner side of limbs, and often the abdomen, washed with fulvous ; long fringe on anterior edge of ear, nearly white ; general color of head, grayish ; whiskers white. Total length, 640 ; caudal vertebræ, 106 ; ear from crown, 171 ; ear from notch, 141 ; hind foot, 145. Skull, 94 x 43 ; mandible, 71 .... *Lepus texianus.*

Size medium. Color above, bright fulvous, not grayish or ashy, much mixed with black ; breast and shoulders, deep fulvous ; below, and on inner surface of limbs, clearer white ; sides of rump and thighs white, lined with black, but without fulvous staining ; long fringe on anterior edge of ear, bright fulvous ; general color of head, brownish yellow ; whiskers white. Total length, 590 ; caudal vertebræ, 77 ; ear from crown, 142 ; ear from notch, 111 ; hind foot, 130. Skull, 97 x 45 ; mandible, 74.
Lepus melanotis.

---

[*] Average of four nominal species from Mexico ; taken from Waterhouse's Nat. Hist. Mam. II, 1848, p. 140.

[†] Taken from the Verreaux specimen, above noticed.

COMPARATIVE MEASUREMENTS OF SKULLS OF *Lepus*.

	Lepus callotis, from Tehuantepec, Mexico.	*Lepus alleni*, from Arizona.	*Lepus melanotis*, from Kansas.	*Lepus texianus*, from Arizona.
Number of specimens..	..2...	..2..	..2...	..16..
Basilar length (from posterior incisors to foramen magnum)...	....	86.0	74.0	72.8
Total length...........	99.3	112.5	97.0	93.9
Greatest breadth......	46.0	49.8	45.0	43.2
Distance between orbits	23.4	36.0	27.0	26.6
Nasal bones, length	43.9	47.7	42.5	39.5
Nasal bones, width behind................................	21.8	24.5	20.0	19.2
Nasal bones, width before.....	20.8	17.5	14.0	14.4
Upper incisors, from front to molars.......................	30.5	35.0	31.0	28.9
Upper incisors, from front to hinder margin of palate...	42.7	44.5	40.8	37.6
Upper incisors, height....	9.9	12.9	11.5	10.2
Upper incisors, width between external edges...............	8.8	9.3	9.0	8.8
Upper molars, length taken together...	17.0	19.2	16.9	16.4
Upper molars, distance between..............................	13.7	14.4	12.2	12.2
Lower jaw, length	70.4	83.2	73.5	70.7
Lower jaw, height	48.0	50.8	45.2	42.9

COMPARATIVE MEASUREMENTS OF *Lepus alleni*, *Lepus texianus*, AND *Lepus melanotis*.

	Number.	Sex and age.	Locality.	Date.	Total length.	Head and body, measured from nose to tuberosity of ischium.	Tail.		Ears.			Distance between eyes.	From tip of nose to						Fore Limb.				Hind Limb.		
							From root to end of vertebræ.	From root to end of hairs.	Height above crown.	Height above notch.	Width.		Eye.	Centre of pupil.	Ear.	Tip of ear.	Occiput.	End of outstretched hind limb.	Length, measured from coracoid process of scapula to end of claws.	From olecranon to end of claws.	Manus, length to end of claws.	Longest claw of manus.	Length, measured from great trochanter to end of claws.	From knee-joint to end of claws.	Pes, length to end of claws.
Lepus alleni	175	♀ ad.	Picacho Sta., Ariz.	April 2, 1885	640	552	55	88	200	158	100	52	65	....	98	315	128	...	....	215	73	13.0	....	265	140
	191	♂ ad.	Rillito Sta., "	May 8, 1885	630	525	77	105	195	155	95	52	66	....	105	315	125	...	....	230	80	13.0	....	290	140
	192	♀ ad.	Red Rock, "	" 8, 1885	660	560	75	100	190	156	90	52	68	....	105	310	127	....	....	220	75	18.0	....	270	183
Lepus texianus	168	♀ ad.	Fort Verde, Ariz.	Jan. 8, 1885	640	497	95	143	169	144	80	44	60	67	92	280	118	810	266	196	71	13.0	340	250	148
	188	♀ ad.	Deming, N. M....	April 20, 1885	580	470	70	110	168	125	80	42	55	66	88	265	104	790	....	180	68	9.0	....	258	130
	331	♀ ad.	Fort Verde, Ariz.	Feb. 25, 1886	660	560	100	140	183	145	90	47	60	69	95	270	115	850	290	210	79	....	370	277	145
	332	♂ ad.	" "	" 25, 1886	666	555	105	145	175	140	90	45	55	64	90	270	106	855	270	203	75	....	355	280	145
	333	♂ ad.	" "	" 25, 1886	630	530	105	135	165	138	90	45	56	66	90	275	110	820	265	195	72	....	345	270	142
	369	♀ ad.	" "	April 3, 1886	595	510	95	130	155	130	90	45	56	65	91	263	110	790	260	200	75	8.6	355	270	145
	512	♂ ad.	" "	Feb. 9, 1887	660	545	118	153	172	145	95	44	62	71	100	278	118	855	280	207	76	14.0	387	282	142
	513	♀ ad.	" "	" 9, 1887	650	546	124	167	170	150	95	43	60	69	97	275	115	845	282	210	80	12.0	395	295	148
	521	♀ ad.	" "	" 21, 1887	650	539	123	160	169	145	90	40	62	68	96	278	113	815	270	200	73	11.0	367	280	148
	532	♂ ad.	Mogollon Mts. "	May 23, 1887	....	500	....	....	178	150	100	43	63	72	99	285	120	....	280	205	80	8.5	378	290	158
	653	♀ ad.	Fort Verde, "	April 15, 1888	670	553	120	160	177	143	95	48	62	70	106	290	112	865	275	192	75	8.5	380	270	150
Lepus melanotis	....	♂ ad.	Independence, K's	Jan. 10, 1890	580	515	73	108	140	110	75	45	54	64	92	245	105	770	260	182	64	10.0	335	240	125
	....	♂ ad.	" "	" 10, 1890	600	535	80	115	145	118	75	45	58	68	95	245	108	820	280	195	66	11.5	365	253	135

AVERAGE AND EXTREME MEASUREMENTS OF *Lepus alleni*, *Lepus texianus*, AND *Lepus melanotis*.

			TAIL.		EARS.				FROM TIP OF NOSE TO						FORE LIMB.				HIND LIMB.		
	Total length.	Head and body, measured from nose to tuberosity of ischium.	From root to end of vertebræ.	From root to end of hairs.	Height above crown.	Height above notch.	Width.	Distance between eyes.	Eye.	Centre of pupil.	Ear.	Tip of ear.	Occiput.	End of outstretched hind limb.	Length, measured from coracoid process of scapula to end of claws.	From olecranon to end of claws.	Manus, length to end of claws.	Longest claw of manus.	Length, measured from great trochanter to end of claws.	From knee-joint to end of claws.	Pes, length to end of claws.
Average of 3 specimens of *Lepus alleni*	643	546	69	98	195	156	95	52	66	....	103	313	127	....	...	222	76	13.0	....	275	138
“ 11 “ *Lepus texianus*	640	527	106	144	171	141	90	44	59	68	95	275	113	830	274	199	75	10.8	367	275	145
“ 2 “ *Lepus melanotis*	590	525	77	112	142	111	75	45	56	66	93	245	106	795	270	189	65	10.7	350	246	130
Maximum of 3 specimens of *Lepus alleni*	660	560	77	105	200	158	100	52	68	....	105	315	128	....	....	230	80	13.0	....	290	140
“ 11 “ *Lepus texianus*	670	560	124	167	183	150	100	48	63	72	106	290	120	865	290	210	80	14.0	395	295	158
“ 2 “ *Lepus melanotis*	600	535	80	115	145	113	75	45	58	68	95	245	108	820	280	195	66	11.5	365	253	135
Minimum of 3 specimens of *Lepus alleni*	630	525	55	88	190	155	90	52	65	....	98	310	125	....	....	215	73	13.0	...	265	133
“ 11 “ *Lepus texianus*	580	470	70	110	155	125	80	40	55	64	88	268	104	790	260	180	68	8.5	340	250	130
“ 2 “ *Lepus melanotis*	580	515	73	108	140	110	75	45	54	64	92	245	105	770	260	182	64	10.0	335	240	125
Average of *Lepus alleni* in inches and hundredths	25.3	21.5	2.72	3.86	7.68	6.14	3.74	2.05	2.60	....	4.06	12.3	5.00	....	..	8.74	2.99	0.51	....	10.8	5.43
“ *Lepus texianus* “ “	25.2	20.8	4.17	5.67	6.73	5.55	3.54	1.73	2.32	2.68	3.74	10.8	4.45	32.7	10.8	7.86	2.95	0.43	14.4	10.8	5.71
“ *Lepus melanotis* “ “	23.2	20.7	3.03	4.41	5.59	4.37	2.95	1.77	2.20	2.60	3.66	9.6	4.17	31.3	10.6	7.44	2.56	0.42	13.8	9.7	5.12
Ratio of dimensions to total length in *L. alleni*	1.00	.849	.107	.152	.303	.243	.148	.081	.103	....	.160	.487	.199	....	...	.345	.118	.020	....	.428	.215
“ “ “ “ *L. texianus*	1.00	.823	.166	.225	.267	.220	.141	.069	.092	.106	.148	.430	.177	.130	.428	.311	.117	.017	.573	.430	.227
“ “ “ “ *L. melanotis*	1.00	.890	.131	.190	.241	.188	.127	.076	.095	.112	.158	.415	.180	.135	.458	.320	.110	.018	.593	.417	.220

MEASUREMENTS OF TWO SKULLS OF *Lepus alleni* AND SIXTEEN SKULLS OF *Lepus texianus*.

	Number.	Sex.	LOCALITY.	Total length.	Greatest breadth.	Height of skull.	Distance between orbits.*	Nasal bones, length.	Nasal bones, width behind.	Nasal bones, width before.	Up. incisors from front to molars.	Upper incisors, to pos. mar. of palate	Upper incisors, height.	Up. incisors. wdth bet. exter. edges.†	Length of upper molar series.†	Distance between upper molars.†	Width across upper molars (out.)†	Length of palate.	Foramen magnum to h. m. of palate.	Posterior incisors to foramen magn.	Greatest breadth across squ mosals	L'th of mandible.	Ht. of mandible, at inferior angle.	Length of inter-frontal suture.	Length of inter-parietal suture.	W'th bet. squam-parietal sutures.
Lepus alleni.	191	♂	Rillito Station, Arizona....	113.0	49.5	47.5	38.0	47.5	24.0	17.5	36.0	44.5	12.2	9.4	19.8	14.8	28.0	9.8	48.5	86.0	35.0	82.4	50.0	46.5	19.0	82.0
	192	♀	Red Rock (S.P.R.R.), Ariz.	112.0	50.0	45.0	34.0	47.8	25.0	17.5	34.0	44.5	13.6	9.2	19.0	14.0	27.8	12.5	46.3	86.0	36.0	84.0	51.5	47.0	20.4	32.0
Lepus texianus.	332	♂	Fort Verde, Arizona... ...	94.7	42.3	38.0	27.0	39.0	20.9	15.0	28.0	36.0	10.7	9.0	17.0	12.7	25.6	8.5	41.0	72.5	30.5	71.3	48.8	85.0	22.0	27.5
	338	♂	" "	95.0	43.0	38.6	26.0	40.0	17.5	14.0	30.0	37.0	8.7	8.0	15.8	12.8	24.2	9.0	42.5	74.0	81.0	69.0	42.1	35.5	23 0	27.0
	351	♂	Phœnix "	91.5	42.0	37.0	26.0	36.0	18.8	14.0	27.0	36.5	9.8	8.5	16.0	11.2	23.0	9.0	39.0	72.0	30.0	68.4	42.5	35.0	21.0	27.3
	352	♂	Cibicu Creek, "	93.8	42.0	37.8	22.0	39.5	19.5	13.7	30.0	37.0	8.5	8.2	15.2	12.0	23.3	10.0	40.5	72.5	30.5	70.0	42.0	34.0	23.0	28.5
	353	♂	Pine Springs, "	97.0	44.2	40.0	29.0	41.3	20.0	14.6	31.0	39.0	11.0	10.0	16.8	13.0	25.0	10.3	42.0	76.5	31.0	73.0	45.0	87.0	24.0	28.0
	369	♂	Fort Verde, "	94.0	42.0	39.0	25.0	39.0	19.5	14.5	28.0	36 5	10.0	8.8	17.0	12.0	24.7	9.0	40.5	72.0	80.0	71.0	43.0	35.0	28.0	27.0
	445	♂	" "	93.0	42.5	38.0	25.5	39.0	19.0	14.4	27.7	37.0	10.2	9.5	16.3	11.5	24.0	9.0	39.0	71.5	30.5	71.0	42.1	37.0	21.5	27.0
	163	♀	" "	98.0	46.0	42.0	29.5	41.4	22.0	16.0	29.0	38.0	11.0	9.5	16.4	12.5	24.2	8.3	42.7	74.6	32.2	73.0	42.0	39.0	23.7	29.0
	188	♀	Deming, New Mexico......	91.0	43.0	35.5	26.5	37.0	19.0	14.0	28.3	37.0	12.0	7.5	15.5	10.0	21.0	9.0	38.0	71.0	30.0	70.0	44.5	34.0	20.0	25 0
	331	♀	Fort Verde, Arizona.... .	99.0	45.2	41.0	30.0	42.8	20.0	15.2	30.5	40.0	10.9	9.5	18.0	13.0	25.0	10.0	43.0	78.0	81.8	74.2	45.3	37.0	21.0	28.5
	334	♀	" "	92.0	41.0	38.5	26 0	42.0	18.0	13.0	29.5	40.0	10.0	8.0	16.6	11.3	24.0	9.8	37.3	70.3	31.0	70.0	48.8	87.0	20.3	27.6
	350	♀	Phœnix, "	95.0	43.0	38.0	26.6	40.0	19.0	14.4	29.0	37.0	10.2	9.2	17.0	12.8	24.0	7.6	41.0	74.0	29.0	71.5	42.8	83.0	23.0	26.3
	354	♀	Fort Verde, "	90 5	43.5	38.0	26.0	37.0	18.0	13.8	27.5	35.5	9.0	8.5	15.2	12.5	24.0	8.5	38.0	69.5	31.0	67.5	39.5	36.0	20.5	28.5
	361	♀	Sulp. Sp. Valley "	95.5	42.4	41.0	28.0	38.0	18.8	15.5	29.6	39.5	11.0	9.0	17.0	12.0	24.0	11.5	40.0	74.0	30.0	72.0	43.4	37.0	23.5	27.0
	446	♀	Fort Verde, "	91.0	45.5	39.0	26.2	40.5	18.4	14.0	28.0	37.0	11.0	10.0	16.8	13.2	24.7	11.0	39.5	71.5	34.0	70.0	43.2	35.7	18.0	28.7
	447	♀	" "	92.0	43.5	38.8	26.5	89.5	20.0	14.0	29.0	38.2	9.0	8.0	15.9	12.0	24.0	10.2	39.0	71.0	32.0	69.5	41.5	35.0	22.0	27.0
Average of 2 skulls of *Lepus alleni*.....				112.5	49.8	46.3	86.0	47.7	24.5	18.0	85.0	44.5	12.9	9.3	19.2	14.4	27.9	11.2	47.4	86.0	35.5	83.2	50.8	46.8	19.7	32.0
" 16 " *Lepus texianus*..				93.9	43.2	38.8	26.6	39.5	19.2	14.4	28.9	37.6	10.2	8.8	16.4	12.2	24.0	9.4	40.2	72.8	30.9	70.7	42.9	35.8	21.8	27.5
Maximum of 2 skulls of *Lepus alleni*...				113.0	50.0	47.0	38.0	47.8	25.0	17.5	36.0	44.5	13.6	9.4	19.3	14.8	28.0	12.5	48.5	86.0	36 0	84.0	51.5	47.0	20.4	32.0
" 16 " *Lepus texianus*				99.0	46.0	42.0	30.0	42.8	22.0	16.0	31.0	40.0	12.0	10.0	18.0	13.2	25.6	11.5	43.0	78.0	34.0	74.2	45.3	39.0	24.0	29.0
Minimum of 2 skulls of *Lepus alleni*....				112.0	49.5	45.0	34.0	47.5	24.0	17.5	34.0	44.5	12.2	9.2	19 0	14.0	27.8	9.8	46.3	86.0	35.0	82.4	50.0	46.5	19.0	32.0
" 16 " *Lepus texianus*.				90.5	41.0	35.5	22.0	36.0	17.5	13.0	27.0	35.5	8.5	7.5	15.2	10.0	21.0	7.6	37.3	69.5	29.0	67.5	89.5	33.0	18.0	25.0
Avge of *L. alleni*, inches and hundredths				4.43	1.96	1.82	1.42	1.88	.96	.69	1.38	1.75	.51	.37	.75	.57	1.10	44	1.87	3.39	1.40	3.28	2.00	1.84	.78	1.26
" *L. texianus* " " "				8.70	1.70	1.53	1.05	1.56	.76	,57	1.14	1.48	.40	.35	.65	.48	.95	.37	1.58	2.87	1.22	2.78	1.69	1.41	.86	1.08
Percentages of total length in *L. alleni*				1.000	.442	.411	.320	.424	.218	.156	.811	.396	.115	.083	.170	.128	.248	.099	.421	.764	.316	.740	.451	.416	.175	.284
" " " *L. texianus*				1.000	.460	.414	.283	.420	.205	.153	.307	.400	.108	.094	.175	.129	.256	.100	.428	.775	.329	.753	.457	.381	.232	.293

* Measurement taken between outer borders of supraorbital processes of frontal bone, measured midway between anteorbital notch and postorbital foramen, at the most expanded portion.

† Measured on alveolæ.

Cynomys arizonensis, sp. nov.

Types, No. 2509, ♀ ad., April 9, 1885, from Point of Mountain, near Wilcox, Southern Arizona; No. 2185, ♂ ad., May 3, 1885, from Dragoon Summit, Southern Arizona. Collected by Dr. Edgar A. Mearns.

Description of Types.—No. 2509, taken on the 9th of April, is still in winter pelage. Color above, nearly uniform sandy buff, with a few scattered black hairs which are only apparent on close scrutiny; this color extends to the limbs, tail, and inguinal region, being palest on the sides and inner surface of the limbs. The hairs have whitish points, which, however, do not give it the much grizzled appearance of *Cynomys ludovicianus* or *C. columbianus*. At a little distance, it appears to be uniformly yellowish. The color below is nearly pure white, a few yellow hairs extending forward from the inguinal region to the abdomen. The chin, throat and upper lips are white. Tail with a narrow sub-terminal band of snuff-brown. Whiskers and claws, black, the latter tipped with horn-color.

No. 2185, taken May 3d, is in fresh summer coat, except posteriorly, where the winter hair is still retained, and is more ochraceous than in the preceding example. The new hair is light cinnamon color nearly to the base, there being little or no under fur. The summer coat is mixed with black hairs, and has the others barely pointed with whitish. In other respects it agrees with the first specimen, except that the latter, which is in winter coat, has an under fur of buffy white, plumbeous-black at base.

Cranial and Dental Characters.—The skull is longer and narrower than in the other species of the genus, and is remarkable for its heavy ossification, the large size of the grinding teeth, and the greater divergence of the upper rows, compared with other species of *Cynomys*, as shown in the accompanying table of comparative measurements.

Remarks.—This "Prairie Dog" is abundant, living in large colonies on the edges of the southern deserts of Arizona, extending its range up to the foot-hills of the lower mésas, being replaced at higher levels by another species. It appears to be somewhat larger than *Cynomys ludovicianus*, and much larger than *C. columbianus.* Its tail is a trifle longer than in the eastern species, and nearly twice the length of that of Colorado specimens of *C. columbianus.*[*]

Synopsis of the Species of CYNOMYS.

Size medium. *In summer*, reddish clay color above, mixed with black hairs, and much grizzled ; forehead sometimes a little dusky ; below vinaceous-buff ; tail broadly tipped with black. *In winter*, pale vinaceous-buff, grizzled, and mixed with black hairs ; below varying from pale buff to ochraceous ; forehead often thickly sprinkled with black hairs. *Dimensions*[†] : head and body, 197–336 (average, 285) ; tail to end of vertebræ, 51–102 (average, 76) ; fore foot, 37–54 (average, 43) ; hind foot, 50–62 (average, 56)........................ ....*Cynomys ludovicianus.*

Size largest. *In summer*, vinaceous-cinnamon above, with but few black hairs, and grizzling obsolete ; below whitish ; tail with a narrow subterminal bar of broccoli brown. *In winter*, pale sandy buff, with few black hairs, and no black on forehead ; below white, in places tinged with buff. *Dimensions*[‡] : head and body, 276–310 (average, 292) ; tail to end of vertebræ, 76–92 (average, 84) ; fore foot, 44–49 (average, 46) ; hind foot, 58–64 (average, 61)................................ ....*Cynomys arizonensis.*

Size smallest. *In summer*, tawney fulvous above, grizzled, much mixed with black hairs ; forehead blackish, especially above the eyes ; tail without terminal black, but often with many blackish hairs above and a narrow subterminal bar. *In winter*, pale buff above, mixed with black hairs, which aggregate to form blackish patches over the eyes ; below varying from pale yellow to fulvous. It appears less grizzled than *C. ludovicianus*, because it lacks the strong vinaceous tint. *Dimensions*[§] : head and body, 270–295 (average, 291) ; tail to end of vertebræ, 63–80 (average, 69) ; fore foot, 38–46 (average, 43) ; hind foot, 55–62 (average, 60). . *Cynomys columbianus.*

---

[*] It is worthy of remark, in this connection, that the form of *Cynomys* inhabiting the higher portions of Arizona differs notably from *Cynomys columbianus* further north. Its general size is much greater in Arizona specimens, the coloration darker in summer, and the tail relatively much longer, and often blackish above for its entire length. The subterminal bar results from broad black annulation of the hairs, the dark rings increasing in extent from the base of the tail to its extremity. The average length of head and body, in eighteen specimens from the mountain parks of Colorado, measured in the flesh by Dr. J. A. Allen, is 253 mm., whereas eleven fresh specimens from the Mogollon and San Francisco Mountains of Arizona, measured by myself, average 291 mm. The tail to end of vertebræ averages but 48.5 mm. in Dr. Allen's series, in mine 69 mm. ; hind foot, 55 mm. in his, against 60 mm. in mine. The adult skulls in my collection from Arizona are also considerably larger than those measured by Dr. Allen. This animal is abundant in the mésas and open parks of Arizona, often living in the pine forests, and sometimes in cliffs, climbing over the rocks like the large Spermophile of this region.

[†] Average of thirty-one specimens ; measurements all taken by collectors in the field from fresh specimens. From Dr. Allen's Monographs of North American Rodentia, 1877, p. 898.

[‡] Average of seven specimens ; measurements all taken by myself in the field from specimens in the flesh.

[§] Average of eleven specimens ; measurements all taken by myself in the field from specimens in the flesh.

Comparative Measurements of Skulls of *Cynomys.*

	Cynomys ludovicianus*.	Cynomys columbianus†.	Cynomys arizonensis.
Number of specimens	19	15	2
Basilar length	....	49.0	54.3
Total length	63.0	58.8	66.0
Greatest width	45.3	42.3	45.5
Distance between orbits	15.0	13.6	14.0
Distance between tips of postorbital processes	28.0	28.0	26.7
Nasal bones, length	22.9	21.5	25.0
“ width behind	6.3	5.6	5.8
“ width before	12.7	10.2	10.2
Upper incisors, from front to premolars	17.5	16.5	17.9
“ from front to hinder margin of palate	35.6	32.5	36.5
“ width between external edges	6.8	6.0	7.1
Length of upper molariform series	16.8	14.7	16.3
Distance between first upper premolars	...	10.5	11.1
“ last upper molars	....	5.0	4.8
Greatest width across upper molars (outside, on crowns)	....	18.0	22.0
Distance between squamoso-parietal sutures	...	15.6	16.0
Antero-posterior diameter of audital bullæ	...	13.4	13.7
Greatest width of zygoma	....	4.1	5.0
Lower jaw, length	41.1	38.2	44.0
“ height	22.9	21.6	25.0

---

* Taken from Dr. J. A. Allen's Monographs of North American Rodentia, 1877, p. 899.

† Taken, in part, from Allen, five specimens from Arizona having been included in the average.

INDEX TO VOLUME II.

PAGE
ACANTHYLIS cinereicauda 260
Accipiter chilensis 105
  pileatus 267, 273
Actitis macularius 109
Adelomyia inornata 100
Ægialitis collaris 109
  nivosa 109
  semipalmata 271, 276
Ænona eufaulensis 115
Agelaius cyanopus 226, 276
  thilius 84
Aglæactis pamela 101
Agyrtria alleni 101
  tephrocephala 260, 276
Amauropsis meekana 115
Amazilia æneobrunnea 163, 182
  lawrencei 163, 182
Amazona ochrocephala 104
  vinacea 264, 276
Ambocœlia umbonata 66
Ammodramus manimbe 83
Ammonites complexus 116
  dento-carinatus 116
  (Placenti.) lobatus 116
  " placenta 116
Ampelion arcuatus 74
  melanocephalus 240, 241
Ampelis atropurpurea 241, 274
  melanocephala 242, 274
  purpurea 241
  tersa 60
  variegata 70
Amusium simplicum 114
Anabates atricapillus 247, 276
  erythrophthalmus 245, 276
  ferruginolentus 246, 276
  leucophthalmus 246, 276
  macrourus 245, 276

PAGE
Anabates rufifrons 244, 276
  striolatus 245
Anabazenops immaculatus 92
  oleagineus 92
  rufosuperciliatus 92
Anæretes parulus 85
Anas cristata 111
  cyanoptera 111
  erythrophthalma 269, 276
  fulva 269
  puna 111
  oxyptera 111
  virgata 269, 276
Anchura pennanta 115
Andigena laminirostris 76
Anhinga anhinga 111
Anthus pœcilopterus vii, 214, 274
Aphrodina tippana 115
Ara ararauna 103
  severa 104
Ardea candidissima 109
  virescens 110
Arremon spectabilis 72
Arundinicola leucocephala 85
Arvicola mongollonensis 283
Asaphus canalis 64
  gigas 64
Asturina nitida 104
Atalapha cinerea 165
Atticora cyanoleuca 216, 274
  " montana 80
  melanoleuca 216, 274
Attila brasiliensis 241, 275
Aulacorhamphus cæruleicinctus 103
Aulia hypopyrrha 239, 275
Automolus ferruginolentus 246, 276
  leucophthalmus 246, 276
  rectirostris 246, 274

PAGE
BACCULITES aspera 116
  ovatus 116
Balanus carbonaria 66
Bartramia longicauda 109
Basileuterus luteoviridis 79
  stragulatus 215, 275
  tristriatus 79
Bathyurus conicus 61
  seelyi 62
Bolborhynchus aymara 104
Brotogerys tui 104
  xanthoptera 104
Buarremon assimilis 71
Bucania tripla 55
Bucco chacuru 102
  macrodactylus 76
Buteo albicaudatus 105
  brachyurus 267, 273

CAIRINA moschata 110
Calidris arenaria 109
Calliphlox amythystina 258, 276
Callista delawarensis 115
Calliste aurulenta 71
  boliviana 81
  cyaneicollis 71
  cyanopygia 71
  cyanoventris 219, 274
  festiva 219, 274
  gyroloides 71, 81
  lunigera 71
  nigricincta 81
  nigriviridis 71
  ruficervix 71
  rufigularis 71
  schrankii 71
  xanthogastra 71, 81
  yeni 71, 81
Campephilus melanoleucus .. 262, 276
  robustus 262, 276
Camptonectes burlingtonensis ... 114
Campylorhynchus hypostictus ... 78
  variegatus 213, 274
Capito bourcieri 76
  richardsoni 76
Caprimulgus æthereus 261, 274

PAGE
Caprimulgus diurnus 261, 274
  leucopterus 261, 274
Cardium eufaulensis 114
  (Criocardium) multiradiatum 114
Cassicus leucurus 226, 276
  persicus 72, 84
  uropygialis 72
Catamblyrhynchus diadema 72
Celeus flavus 101
Centropelma micropterum 112
Cephalopterus penduliger 74
Cercomacra tyrannina 95
Certhiola chloropyga 81
Ceryle amazona 101
  americana 101
  stellata 101
  superciliosa 101
Chætura cinereiventris 260
Chamæza brevicauda 255, 275
Charadrius brevirostris 271, 276
  dominicus 109
  flavirostris 271, 276
Chelidoptera tenebrosa 103
Chiroxiphia pareola 72
  " boliviana 87
Chlorochrysa nitidissima 71
Chloronerpes canipileus 101
  fumigatus 101
  malherbii 101
  nigriceps 101
Chlorophanes spiza cærulescens, 69, 80
Chlorospingus albitempora 82
Chlorostilbon haberlini 182
  prasinus 101
Chonetes mucronatus 66
Chrysolampis mosquitus 182
Chrysuronia chrysura 100
  josephinæ 100
Cibota rostellata 114
Cillurus rivularis 88
Cinclodes albidiventris 88, 89
  fuscus 89
  rivularis 89
Circus maculosus 266, 273
Cissopis leveriana 83
Cithara crosswickensis 115

PAGE
Cithara mullicænsis 115
Clavagella armata.... 115
Cœreba cœrulea............ 69, 80
  " microrhyncha... 80
Colaptes rupicola.............. 101
Columba gymnophthalmus ..270, 276
  leucoptera.............270, 276
  locutrix......... .....270, 276
  plumbea.................. 270
  speciosa 105
Columbigallina passerina........ 76
  talpacoti 105
Compsocoma flavinucha......... 81
Compsothlypis pitiayuma 79
Conirostrum cyaneum 80
Conopias trivirgata 234, 275
Conopophaga lineata 256, 275
  rusbyi 96
Contopus ardesiacus............ 87
Conurus aureus............... 104
  cactorum.............263, 276
  cruentatus...........263, 276
  melanurus 263
  molinæ.................. 104
  pavua.................... 104
  petzi 263
  rupicola.......... 104
  speculatus................ 263
  weddelli 104
Copurus colonus............... 85
Corvus cristatellus. 227
  cyanoleucus 227, 276
  cyanopogon 227, 276
Coryphospingus pileatus 225, 274
Corythopis calcarata........256, 276
Cotinga cayana................ 88
  mayana. 74
Crassatella cuneata............. 114
  lintea....... 114
  vadosa.................. 114
Crax carunculata........ 106
Crotophaga ani................ 103
Crypturus noctivagans......272, 276
  pileatus.................. 112
Curæus aterrimus 84
Cyanocorax chilensis........... 85

PAGE
Cyanocorax cyanoleucus.....227, 276
  cyanopogon 227, 276
Cyanospiza cyanella............ 140
Cyanotis azaræ........... 85
Cyclarhis 183
Cyclarius guianensis...... 127
Cyclorhis albiventris........127, 129
  altirostris.........125, 127, 129
  atrirostris. 135
  cearensis 125, 127, 128, 130
  contrerasi................. 135
  flavipectus........130, 134, 135
    " subflavescens.... 131, 134, 135
    " trinitatis, 131, 134, 135
  flaviventris....... 131, 134, 135
    " yucatanensis..... 132, 134, 135
  guianensis....125, 133, 134, 135
  insularis......... 132, 134, 135
  nigrirostris 135
  ochrocephala......125, 127, 134
  virenticeps 135
  viridis....... .... 124, 125, 126, 127, 134, 135, 250
  wiedii................127, 129
Cymbilanius lineatus........... 74
Cynomys arizonensis............ 305
  columbianus...... 306
  ludovicianus.... 306
Cyprimeria densata 115
Cypselus acutus. 260
  collaris...............260, 274
  pelasgius......... 260
Cypsnagra ruficollis............ 82
Cyrtoceras beekmanensis........ 57
  kirbyi 57
  raei 58
Cystophora cristata...........3, 8
  antillarum..............3, 25

DACNIS angelica 69, 80
  cayana 80
  egregia æquitorialis 69
  plumbea 217, 274
  speciosa..............217, 274

PAGE

- Dafila spinicauda 111
- Delphinula lapidosa 115
- Dendrocolaptes bivittatus 248
  - guttatus 248
  - lafresnayanus 160
  - procurvus 154, 160
  - rufus 248, 276
  - trochilirostris 154
- Dendrocopus falcularius 161
- Dendrocygna fulva 269, 276
- Dendroica blackburniæ 69
  - striata 192
- Dendrornis brevirostris 155
  - guttatus 248
- Dianchora echinata 114
- Diglossa sittoides 69
- Dipodomys chapmani 290
  - merriami 289
  - phillipsi 290
- Diuca diuca 84
- Dolichonyx oryzivorus 84, 192
- Dosinia gabbi 115
- Dromococcyx phasianellus 103
- Dryoscopus lineatus 101
- Dysythamnus mentalis, 193, 250, 276
  - plumbeus 250, 275

- ECCULIOMPHALUS priscus 46
- Elænea 183
- Elainea affinis 183, 181, 207
  - albiceps 183, 197, 203
  - albiventer 197
  - arenarum 208
  - barbadensis 184, 197, 200
  - brevipes 238
  - chiriquensis 183, 196, 199
  - cinerea 207
  - cinerescens 184, 197, 200
  - cristata 197
  - fallax 204
  - frantzii 183, 204
  - gaimardi 183
  - gigas 184, 203
  - gracilis 197
  - griseogularis 184, 197
  - hypospodia 207

PAGE

- Elainea incompta 196, 199
  - leucospodia 207
  - martinica 197, 199
  - mesoleuca 184, 197, 203
  - modesta 184, 196, 197
  - obscura 205
  - “ rustica 184, 206
  - obsoleta 148
  - olivacea 206
  - olivina 208
  - pagana 183, 196, 198, 232, 275
  - “ albiceps 183, 197, 200
  - “ martinica 196
  - “ subpagana 196, 198
  - pallatangæ 208
  - parvirostris 197
  - pudica 184, 204
  - ridleyana 186
  - riisii 184, 197
  - rustica 206
  - semipagana 184, 196
  - spectabilis 186, 203
  - strepera 197
  - subpagana 184, 196
  - taczanowskii 207
- Emberiza cyanella 140
- Empidochanes fuscatus, 193, 235, 275
- Empidonax bimaculatus 150, 193
  - bolivianus 86, 150
  - brunneus 150
  - lawrencei 150
- Empidonomus varius 193, 236, 275
- Engyptila rufaxilla 106
- Enicornis striata 89
- Erignathus barbatus 3, 8, 14, 15, 17, 18
- Erismatura ferruginea 111
- Eucephala cyanogenys 259, 276
- Euphone musica 218
  - rufiventris 218
  - violacea 218
- Euphonia crassirostris 81
  - laniirostris 81
  - nigricollis 218
  - pectoralis 218
  - saturata 71

PAGE

Euphonia violacea lichtensteinii 218
  xanthogastra 71, 81
Euomphalus calciferus 47
  uniangulatus 41
Eupetomena hirundo 100
Eurypyga helias 107
Euscarthmus cinereicollis 229, 275
  margaritaceiventer 144
  meloryphus 230, 275
  nidipendulus 229, 275
  ochropterus 143
  orbitatus 229, 275
  pelzelni 144
  superciliaris 145, 230, 275
Eustephanus fernandensis 100
Exogyra costata 115

Falco albifrons 267, 273
  palliatus 268, 273
  palustris 266, 273
  pileatus 267, 273
  rufifrons 268, 273
  skotopterus 267, 273
  sparverius cinnamominus 105
  tyranninus 267, 273
  unicinctus 268
  vitticaudus 268, 273
Fiber zibethicus 281
  pallidus 280
Florisuga fusca 257, 276
Formicarius analis 98
Formicivora bicolor 95
  grisea 252, 275
  griseigula 151
  rufatra 253
  rufa 253, 276
  strigilata 254, 275
  variegata 251
Fringilla atricapilla 224, 274
  brissoni 222
  crassirostris 222, 274
  falcirostris 224
  fuliginosa 224, 274
  jugularis 222
  leucopogon 223, 274
  melanocephala 223, 274

PAGE

Fringilla minuta 224, 274
  ornata 225, 274
  pileata 225, 274
  plumbea 223, 274
  pyrrhomelas 222, 274
  rufirostris 223, 274
Fulica ardesiaca 107
Furnarius albogularis 88, 242, 274
  figulus 242

Galbalcyrhynchus leucotis 102
Galbula albirostris chalcocephala, 75
  chalcocephala 75
  chalcothorax 75
  magna 262
  rufoviridis 102, 262
  viridis 262
Galeoscoptes carolinensis 192
Gallinula garmani 107
  pileata 271, 276
Gampsonyx swainsoni 268, 273
Geocitta cunicularia 88
Geothlypis trichas 192
Geotrygon boucieri 139
  montana 106
Glaucidium ferox ferrugineum 266, 274
  ferrugineum 266
  minutissimum 266
  nanum 104
  phalænoides 266
  pumilum 266, 274
Glaucis hirsuta 257, 276
Glyphorhynchus cuneatus 248, 276
  ruficaudus 248, 276
Grallaria ochroleuca 256, 275
  rufula 75
Granatellus pelzelni 79
Gryphæa vesicularis 114
  “ var. navia 114
Guiraca cyanea 83
Gymnoderus fœtidus 88
Gymnopelia erythrothorax 106
Gymnostinops yuracares 84
Gyrodes petrosa 115

PAGE
HABIA ludoviciana.... 72, 192
Habrura minima.... 146
pectoralis.... 145, 146, 147
superciliaris.... 145, 230, 275
Hæmatopus brasiliensis.... 271
Hapalocercus meloryphus.... 230, 275
Harporhynchus rufus.... 192
Heliactin cornuta.... 258, 276
Heliornis fulica.... 107
Hemiprocne zonaris.... 260, 274
Herpsilochmus pileatus.... 193
rufomarginatus.... 251, 275
Hesperomys aztecus.... 179
floridanus.... 117
leucopus deserticolus....
285, 286, 287
" nebracensis.... 285, 286
" sonoriensis....
180, 284, 285, 286
" texanus.... 285, 286
mexicanus.... 179
niveiventris.... 117
toltecus.... 181
Heteropelma flavicapillum.... 193
turdinum.... 236, 275
virescens.... 238, 275
Hirundinea bellicosa.... 86, 234, 275
Hirundo acuta.... 260
collaris.... 260
jugularis.... 217, 274
melanoleuca.... 216, 274
minuta.... 216, 274
pascuum.... 216, 274
torquata.... 217
viridis.... 70
Hoplopea turgida.... 43, 50
Hydropsalis, sp. incog.... 100
Hylactes castaneus.... 99
tarnii.... 99
Hylocharis cyanea.... 259
lactea.... 259
sapphirina.... 259, 276
Hylophilus cæruleus.... 220, 232, 274
cinerascens.... 148, 149, 231, 274
cyanoleucus.... 220, 232, 274
flaveolus.... 215, 274

PAGE
Hylophilus ruficeps.... 221, 274
poicilotis.... 215
thoracicus.... 215
Hypocnemis leucophrys.... 96
myiotherina.... 255, 275

IBYCTER ater.... 105
Ictinia plumbea.... 105
Icterus atroviolaceus.... 226, 276
croconotus.... 72, 85
galbula.... 192
violaceus.... 226
Idonearca tippana.... 114
vulgaris.... 114
Inoceramus barabini.... 114
sagenensis.... 114
vanuxemi.... 114
Iridiornis dubusia.... 71
Isocardia conradi.... 114

JACANA jacana.... 108

LANIAGRA guianensis.... 127
Lanio versicolor.... 82
Lanius cæsius.... 250
Larus cirrhocephalus.... 111
serranus.... 111
Lathria cinerea.... 88
plumbea.... 88
vociferans.... 268, 273
Legatus albicollis.... 233, 275
Legumen ellipticum.... 115
planulatum.... 115
Leiopistha protexta.... 114
Leiorhynchus lævis.... 66
limitatis.... 66
Leptasthenura ægithaloides.... 90
andicola.... 75
fuscescens.... 90
fuliginiceps.... 91
" boliviana.... 91
Leptodon cayennensis.... 268, 273
unicinctus.... 268, 273
Leptopogon superciliaris.... 85
Leptosolen biplicata.... 115
Lepus alleni....
294, 300, 301, 302, 303, 304

PAGE

Lepus californicus 295
callotus..................
295, 296, 297, 299, 300, 301
" texianus 298
melanotis 297, 301, 302, 303
texianus ....
295, 297, 299, 300, 301, 302, 303, 304
Leuconerpes candidus.......262, 274
Leucopternus lacernulata........ 273
Linearia metastriata............ 115
Lingula acuminata............ 41
Lipaugus simplex..........240, 275
Lithodomus affinis............ 114
ripleyana 114
Lobos marinos 4
Lophornis regulus............ 100
Lophospira calcifera.......... 55

MACHÆROPTERUS deliciosus..... 73
strigilatus.............236, 274
striolatus 73
Machætornis rixosa.....85, 228, 275
Maclurea matutina........... 42
sordida 41, 49
Macroxus leucops......... 166
Manacus manacus............ 73
Margarita abyssina.......... 115
Masins coronulatus........... 72
Mecocerculus uropygialis....... 141
Melanerpes cruentatus.......... 101
Merulaxis rhynolophus......257, 275
Metopiana peposaca........... 269
Metoptoma alta............. 44
Microcerculus bicolor.......... 79
Micropalama himantopus........ 109
Mimus brasiliensis............ 213
thenca.................. 78
Milvago megalopterus.......... 105
Milvulus tyranninus............ 87
Mitua tuberosa............. 106
Molothrus bonariensis 226, 276
Momotus microstephanus....... 101
nattereri 101
Monachus monachus.....1, 3, 8, 18
tropicalis...............vii, 1, 3
Monasa nigrifrons............ 102

PAGE

Monasa peruana............. 102
Morea cancellata............. 115
Murchisonia ? confusa......... 54
Murchisonia gracilens.......... 53
Mus rattus................. 179
Muscicapa agilis.............. 215
albicapilla............... 197
aurifrons.............237, 275
brevipes..............237, 275
brevirostris........196, 232, 275
cæsia................250, 275
chrysochloris...........227, 275
martinica.............196, 199
martinicana cristata.....196, 199
mastacalis............... 276
miles................228, 275
obsoleta..............148, 231
olivacea................. 206
pagana.................. 196
plumbea................. 239
rivularis..............215, 274
rupestris................ 234
rustica...............240, 275
sibilatrix..............239, 275
squamata.............240, 275
trivirgata..............234, 275
turdina...............236, 275
uropygiata.............241, 275
virescens.............237, 275
vociferans.............239, 275
Muscicapara boliviana.......... 206
obsoleta 148
Muscipeta albiceps. ...197, 200, 201
asilus................231, 275
aurantia..............239, 275
citrina...............233, 275
flaviventris............232, 275
fuscata...............235, 275
guillemini................ 206
incanescens...147, 149, 231, 275
marginata.............238, 275
mastacalis................ 275
modesta..........196, 232, 275
obscura 205, 206
platyrhyncha...........234, 275
ruficauda.............236, 275

PAGE
Muscipeta splendens........238, 275
    strigilata..............235, 275
Muscisaxicola rufivertex......... 85
Myiagrus lineatus..........256, 275
Myiarchus tyranninus. 87
Myiobius barbatus............. 275
    cinnamomeus............. 86
    pulcher................72, 148
Myiopagis.................... 195
Myiopatis obsoleta............ 148
Myiothera ardesiaca........255, 275
    calcarata..............256, 276
    cinerea................252, 276
    indigotica.............257, 276
    leucophrys.............252, 275
    maculata...............254, 275
    plumbea................250, 275
    poliocephala...........250, 276
    rhynolopha.............257, 275
    rufa...................253, 276
    ruficauda..............254, 275
    scapularis.............251, 275
    strigilata.............254, 275
    superciliaris............. 252
    variegata..............251, 275
Myioturdus marginatus.....255, 275
    ochroleucus............256, 275
Myiozetetes granadensis........ 72
Myrmeciza ruficauda........254, 275
Myrmelastes plumbeus......... 95
Myrmochanes hypoleucus....... 95
Myrmotherula axillaris.......... 95
    gularis................252, 276
    melanogastra............. 253

NATICA abyssina.............. 115
Neithea quinquescostata........ 114
Nemodon eufaulensis........... 114
Nemosia flavicollis..........82, 232
    giura..................82, 232
    melanoxanthus............ 232
    pileata............220, 232, 274
    ruficapilla........221, 232, 274
Neofiber alleni................ 119
Neopelma aurifrons........237, 275
Nyctibius æthereus.........261, 274

PAGE
Nyctibius leucopterus. 261, 274
Nycticorax nycticorax nævius.... 110
    pileatus.................. 110
Nucula slackiana............... 114
Nuculana longifrons 114
Numenius brasiliensis.......272, 276
    hudsonicus................ 119

OCHTHŒCA flaviventris......... 150
    thoracica.................. 85
Ochthornis murina............. 85
Odontofusus medians.......... 115
Opetiorhynchus rectirostris..246, 274
    ruficaudus.............242, 274
    turdinus...............213, 274
Ophileta compacta..........48, 49
    complanata..........41, 43, 48
    levata..............43, 48, 49
    nerina..................... 48
Opisthocomus cristatus......... 107
Orchilus auricularis..........229, 275
Oriolus violaceus............226, 276
Orizoborus maximiliani......222, 274
Ornithion cinerascens..148, 231, 274
    inerme..................... 85
    obsoletum..............148, 231
Ortalis guttata................ 107
Orthis macleodi............... 43
Orthoceras primigenium........ 56
Osculatia sapphirina........... 137
Ostinops atrovirens. 84
    decumanus................. 84
Ostræa falcata................ 114
Oxyurus spinicaudus........... 92

PACHYRHAMPHUS atricapillus....
    238, 275
    minimus................. 146
    niger...................... 88
    " polychropterus....238, 275
    rufescens.................. 88
    rufus..................239, 275
Palamedea cornuta............ 110
Paroaria capitata.............. 84
    cervicalis................. 84
    cucullata.................. 84

PAGE
Paroaria gularis 84
" cervicalis 84
Parus aureola 72
Patagona gigas 100
Penelope boliviana 106
leucoptera 270, 276
sclateri 106
Peristera cinerea 106
mondetoura 151
Petasophora anais iolota 100
serrirostris 258, 276
Phacellodomus rufifrons 244, 274
Phalacrocorax brasilianus 111
Pharomacrus antisiensis 75
pavoninus 75
Pheuticus aureiventris 83
chrysogaster 72
Philydor atricapillus 247, 276
striaticollis 92
superciliaris 247
Phlogopsis bowmani 97
nigromaculata 97
notata 97
Phoca fœtida 3
grœnlandica 3, 17, 18
tropicalis 3, 24
vitulina 3, 8, 14, 15, 17, 18
Phœnicircus nigricollis 74
Phœnicothraupis rubica 220, 274
Phonipara fuliginosa 224, 274
Phrygilus alaudinus 83
aldunatii punensis 83
fruticeti 83
Phyllomyias berlepschi 147, 231
brevirostris 231, 275
incanescens 147, 231, 275
Phytotoma raimondii 88
rara 88
Piaya cayana 103
Picolaptes affinis 93
bivittatus 248, 276
lacrymiger 93, 94
obtectus 94
peruvianus 93
warszewiczi 93
Picus candidus 262, 276

PAGE
Picus comatus 262, 276
robustus 262, 276
Pinna laqueata 114
Pionopsitta mitrata 265, 276
Pionus corallinus 104
menstruus 104
Pipile cumanensis 107
jacutinga 270, 276
Pipilo erythrophthalmus 192
Pipra auricapilla 72
cyaneocapilla 72
fasciata 87
filicauda 72
manacus 73
strigilata 236, 274
Pipreola sclateri 74
Piranga ardens 71
erythromelas 192
Pitangus bolivianus 86
Pithys albifrons 74
" peruvianus 74
peruvianus 74
Pitylus grossus 83
Platyrhynchus bifasciatus 141, 143
cancrominus 143
coronatus 85
insularis 143
leucoryphus 228, 275
mystaceus 143
" albogularis 143
" cancrominus 143
" insularis 143
nuchalis 233, 275
paganus 196
rostratus 228, 275
rupestris 234, 275
Pleurotomaria beekmanensis 53
Pleurotomaria? turgida 43, 50
Plicatula urticosa 114
Podager nacunda 261, 274
Podiceps rollandi 111
Polioptila leucogastra 213, 274
Porphyrospiza cærulescens
140, 225, 274
cyanella 140, 225
pulchra 140, 225

PAGE
Porzana cayennensis 271
    viridis 271, 276
Primitia ? cristata 59
Primitia gregaria 58
    seelyi 60
Procnias cærulea 70
    cyanotropus 218, 274
    melanocephalus 241
    ventralis 70, 218, 274
    viridis 69, 80
    tersa 69
Progne tapera 216, 274
Protobalanus hamiltonensis 67
Pseudochloris lutea 83
Pseudoleistes guirahuro 227
Psittacus cactorum 263, 276
    cruentatus 263, 276
    cyanogaster 264
    erythropterus 265
    melanonotus 264, 276
    mitratus 265, 276
    pileatus 265
    vinaceus 264, 276
Psittospiza riefferi 72
Psophia leucoptera 107
Pteroglossus beauharnaisi 103
    castanotis 103
Pteroptochos albifrons 99
Ptilochloris squamata 240, 275
Putorius brasiliensis frenatus 165
Pyrifusus cuneus 115
? " mullicænsis 115
Pyriglena picea 96
    serva 96
Pyrocephalus coronatus 235
    rubineus 72, 86, 235, 275
Pyropsis obesa 115
    octolirata 115
    reileyi 115
    trachyformis 115
    (Rapa ?) corrine 115
Pyrrhula falcirostris 224

RADULA acutiradiata 114
    pelagica 114
Raphistoma lawrentina 42

PAGE
Raphistoma prævium 52
Rhamphastos cuvieri 103
    tocard 76
    toco 103
Rhamphocœlus atrosericeus 82
    icteronotus 71
    nigrogularis 71
Rhamphocœnus melanurus 254, 275
Rhyncocyclus flaviventris 233, 275
    olivaceus 233, 275
    sulphurescens 85
Rostellaria ? hebe 115
Rostellites texanus 113
    texturatus 113
Rupicola sanguinolenta 74
Rupornis magnirostris 104
    pucherani 104

SALTATOR atricollis 222
    laticlavius 82
    magnus 82
    similis 221, 274
    superciliaris 82, 221
    viridis 126
Sayornis cineracea 85
Scalaria sillimani 115
Scaphites conradi 116
    iris 116
Schistochlamys atra 83
    capistratus 222, 274
Sciurus alstoni vii, 167
    aureigaster 166
    aureogaster leucops 166
    hudsonius 278, 279
        " douglassi 279
        " fremonti 278, 279
        " mongollonensis 277
        " richardsoni 279
    leucops 166
    nayaritensis vii.
    variegatus 166
Sclerurus fuscus 242, 276
    umbretta 243, 276
Scytalopus albifrons 99
    bolivianus 98
    indigoticus 257, 276

PAGE

Seal, Jamaica 4
  Pedro 4
  West Indian 1
Seiurus noveboracensis 192
Setophaga melanocephala 79
Sialia sialis 192
Sigmodon berlandieri 181
  fulviventer 180
  hispidus 180, 288, 289
  " arizonæ 287, 289
  " berlandieri, 180, 288, 289
  " littoralis 118, 288, 289
  toltecus 181, 288, 289
Sisopygis icterophrys 227, 275
Sittasomus erythacus 247, 276
  olivaceus 247, 276
Spermophila homochroa 72
Spermophilus annulatus 172
  grammarus 170
  grammurus macrourus 170
  macrourus 170
  spilosoma 172
Sphenura frontalis 244
  striolata 245
  sulphurascens 246
  superciliaris 247
Spinus barbata 83
  tristis 192
Spizaëtus tyranninus 267, 273
Sporophila cærulescens 83, 223, 274
  castaneiventris 83
  cucullata 224, 274
  gutturalis 223, 274
  hypoleuca 223, 274
  lineola 83
  nigriaurantia 222, 274
  plumbea 222, 274
Squalodon atlanticus 39
  holmesi 38
  teidemani 35
Steganura addæ 100
Stelgidopteryx ruficollis 217, 274
Sterna argentea 272, 276
  eryththrorhynchos 272, 276
  flavirostris 272
  magnirostris 111, 272

PAGE

Sterna maxima 272, 276
  superciliaris 272, 276
Straparollus sordidus 49
Strix ferruginea 266, 274
  minutissima 266, 274
  pulsatrix 265, 274
Sublegatus arenarum 208
  glaber 208
  griseocularis 208
  platyrhynchus 148
  virescens 149
Sycalis pelzelni 83
Sylvia cærulescens 218, 274
  flaveola 215, 274
  leucogastra 213, 274
  poicilotis 215
  speciosa 217, 274
Synallaxis azaræ 243
  caudacutus 244, 274
  cinereus 243, 274
  cinnamomea 244, 274
  flammulata 75
  frontalis 91, 243
  griseiventris 91
  humicola 92
  pallida 244, 274
  pudica 91
  ruficapilla 243, 274
  torquatus 244, 274
  unirufa 139
Syrnium perspicillatum 265, 274
  pulsatrix 265

TACHYCINETA albiventris 79
  meyeni 79
Tachyphonus cristatus 71
  luctuosus 82
Tænioptera irupero 85
  velata 85
Tamias asiaticus borealis 178
  " bulleri 173, 178
  " dorsalis 178
  " hindsii 178
  " macrorhabdotes 117, 118
  " merriami 176

PAGE
Tamias asiaticus pallidus.....177 178
" quadrivittatus... 177, 178
" townsendi..177, 178
hindei.......... 178
hindsii.......... 178
Tanagra auricapilla.........220, 274
cærulescens.......140, 225, 274
capistrata..........222, 274
cœlestis.......... 71
citrinella.......... 219
cyanomelas..........218, 274
cyanoptera.......... 82
elegans..........219, 274
episcopus leucoptera........ 81
flammiceps..........220, 274
jugularis.......... 222
palmarum.........82, 219, 274
rubricollis..........219, 274
ruficeps.......... 221
superciliaris..........221, 274
Tanagrella cyanomelas......218, 274
Tellimera eborea.......... 115
Terebratula floridana.......... 114
Teredo tibialis.......... 115
Terenura maculata.........254, 275
Tersina cærulea.......... 70
Tetragonops rhamphastinus..... 76
Thalurania glaucopis.......260, 276
nigrofasciata.......... 100
Thamnomanes cæsius.......250, 275
Thamnophilus affinis.......... 151
ambiguus.........193, 248, 275
amazonicus.......... 94
cristatus..........249, 275
doliatus.......... 151
" mexicanus.......... 151
guianensis..........127, 250
major.......... 94
nigricans.......... 248
radiatus..........94, 193
rufater.......... 253
ruficapillus..........249, 275
ruficollis.......... 94
scalaris.......... 249
Thripadectes scrutator.......... 92

PAGE
Thripobrotus warszewiczi....... 93
Thripophaga erythrophthalma... 245, 276
macroura..........245, 276
Thryophilus guarayanus........ 79
nigricapillus.......... 69
Thryothorus coraya.......151, 214
genibarbis.........79, 139, 214
gladiator..........254, 275
longipes.......... 138
longirostris.......... 214
macrurus.......... 137
mysticalis..........79, 139
platensis..........214, 275
striolatus.......... 214
Tiaris ornata..........225, 274
Tigrisoma brasiliense.......... 110
Tinactor fuscus........242, 243, 276
Tinamus guttatus.......... 112
noctivagans..........272, 276
Tityra albitorques..........73, 74
cayana.......... 73
" brasiliensis.......... 73
fraseri.......... 74
inquisitrix..........73, 74
nigriceps..........73, 74
personata..........73, 74
" griseiceps........ 74
" semifasciata....74, 88
Todirostrum chrysocrotaphum... 85
poliocephalum..........228, 275
ruficeps.......... 72
Todus poliocephalus........228, 275
Totanus maculatus.........271, 276
melanoleucus......109, 271, 276
Triblidium pileolum.......... 46
Trichothraupis quadricolor..... 71, 220, 274
Triclaria cyanogastra.......264, 276
Trigonia eufaulensis.......... 114
Tringa fuscicollis.......... 109
maculata.......... 109
Triplesia radiata.......... 43
Trochilus ater..........257, 276
bilophus.......... 258
campestris..........258, 276

PAGE
Trochilus cornutus 258, 276
  cyanogenys 259, 276
  ferrugineus 257, 276
  glaucopis 260
  latirostris 259, 276
  petasophorus 258, 276
  pileatus 260, 276
  vulgaris 260, 276
Trochonema exilis 51
Troglodytes aëdon 192
  furvus 214
  musculus 79, 214, 275
  solsticialis frater 79
Trogon collaris 101
  melanurus 102
  ramonianus 75
  variegatus 102
  viridis 75, 102
Trupialis militaris 84
Tryblidium ? acutum 45
Turbinopis major 115
Turbo dilucula 43
Turbo ? obscura 43
Turdus atricapillus 213
  brasiliensis 213
  ferrugineus 212, 274
  fumigatus 213, 274
    " hauxwellii 78
  gigas 76
  gymnophthalmus 78
  phæopygus 78
Turritella encrinoides 116
  granulicostata 116
  planilateralis 116
  vertebroides 116
Tyranniscus uropygialis 141
Tyrannula martinica 196
Tyrannus melancholicus 87
  tyrannus 192

UPUCERTHIA dumetoria 88
  ruficauda 88
  vulgaris 88, 89

PAGE
Urochroma wiedi 264, 276
Urogalba paradisea amazonum 102
Urubitinga lacernulata 267
  zonura 105

VALEDA lintea 115
Vanellus resplendens 108
Veniella conradi 115
Venus ripleyana 115
Vireo agilis 215
  chivi 79
Volatina jacarina 83
Volutoderma gabbanna 115
? mucronata 115
Volutomorpha abbotti 115
  conradi 115
  kanei 115
Vespertilio nigricans ? 165
Vesperugo fuscus 165

XANTHOURA yncas 85
Xenophora leprosa 115
Xipholena atropurpurea 241, 274
Xiphorhynchus brevirostris 155, 156
  dorsoimmaculatus 154, 159
  falcularius 153, 154, 161
  granadensis 157
  isabella 156, 157
  lafresnayanus 154, 160
  procuroides 158
  procurvus 153, 154, 155, 160, 161
  procurvoides 154, 158, 159
  pucheranii 153
  pusillus 153, 154, 157
  rufodorsalis 154, 160
  subprocurvus 158
  thoracicus 154, 160
  trochilirostris 153, 154, 162
  venezuelensis 154, 156
  wiedii 155

ZENAIDA maculata 105
Zonotrichia pileata 83

⑱
25154

BINDING SECT. SEP 12 1967

QH
1
A4
v.2
Biological
& Medical
Serials

American Museum of Natural
history, New York
Bulletin

PLEASE DO NOT REMOVE
CARDS OR SLIPS FROM THIS POCKET

UNIVERSITY OF TORONTO LIBRARY

STORAGE